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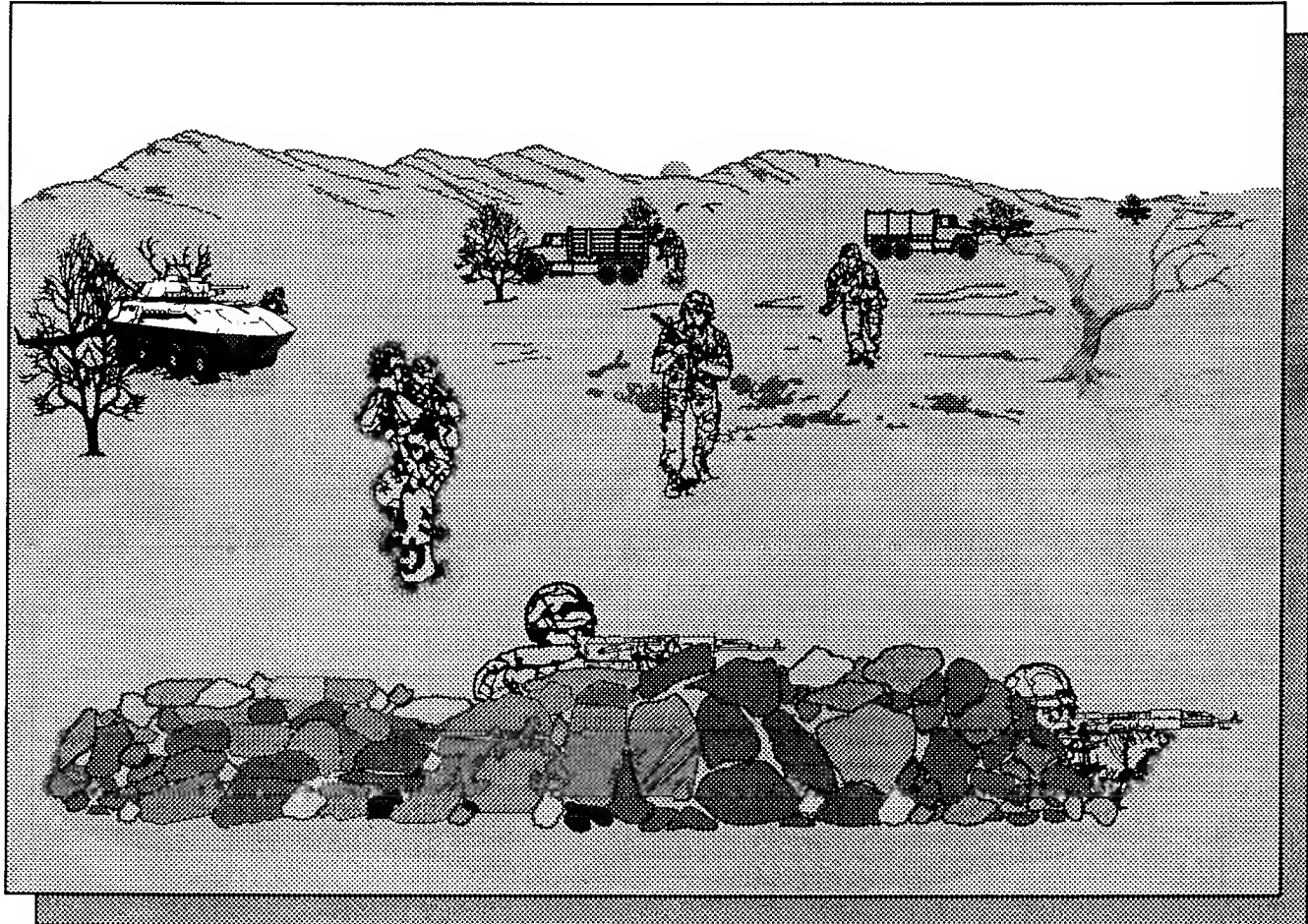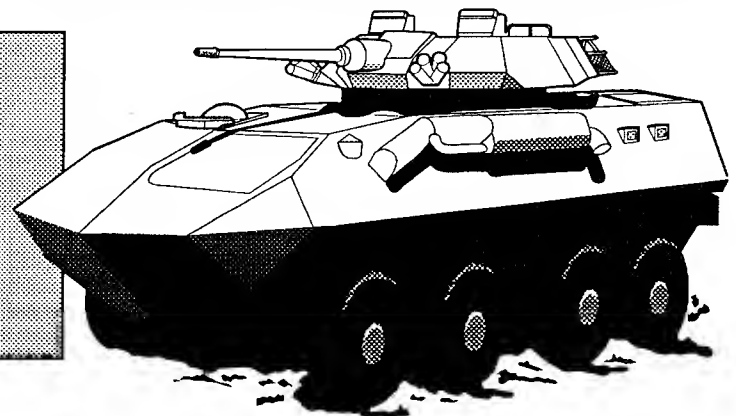
LIGHT OPPOSING FORCE (OPFOR) TACTICS HANDBOOK

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Training

Light Opposing Force (OPFOR)
Tactics Handbook

Preface

This handbook is the sixth in a series of eight Training and Doctrine Command Pamphlets that documents the capabilities-based OPFOR model. The goal is to provide you a baseline opposing force for training. The capabilities-based OPFOR training model is the basis for the forces and doctrine used by TRADOC organizations, including all centers and schools, the OPFOR units at the Combat Training Centers (CTC), and in the TRADOC Common Teaching Scenario.

The proponent for this pamphlet is the TRADOC Deputy Chief of Staff for Intelligence. This pamphlet serves as the **coordinating draft** for the handbook's final publication as a Department of the Army Field Manual 100-64. The proponent encourages users to send comments and suggested improvements on DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to the TRADOC ODCSINT, Threat Support Division, ATTN: ATZL-CST (BLDG 53), 700 Scott Avenue, Fort Leavenworth, Kansas 66027-5310. Users may also submit suggested improvements using DA Form 1045 (Army Ideas for Excellence Program (AIEP) Proposal).

Unless otherwise stated, whenever the masculine gender is used, both men and women are included.

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OPPOSING FORCE

Army Regulation 350-2 defines the Opposing Force (OPFOR) as follows:
"An organized force created from U.S. Army units trained, organized, and equipped to portray the doctrine, tactics, and configuration of a potential adversary armed force during U.S. Armed Forces training."

CONCEPT

This tactics handbook is one in a series of eight Training and Doctrine Command (TRADOC) pamphlets that document the capabilities-based OPFOR model. This model provides a flexible training adversary that allows tailoring to represent a wide range of potential capabilities and organizations. The model features a heavy and a light OPFOR package. Each package contains three documents:

- An organization guide.
- An operational art handbook.
- A tactics handbook.

The model will also feature an equipment handbook and an Operations Other than War (OOTW) handbook. Published as TRADOC pamphlets, they serve as coordinating drafts for the 100-60-series Department of the Army field manuals (FMs).

The capabilities-based OPFOR model represents a break from past practice in two principal respects. First, while the doctrine and organization of foreign armies are the basis for the heavy and light packages, they are not simply unclassified handbooks on the forces of a particular country or scenario. The OPFOR packages are composites that to provide a wide range of capabilities. Second, the packages are not a fixed order of battle but, rather, provide the building blocks to derive a large number of potential orders of battle.

The capabilities-based OPFOR model is the basis for the forces and doctrine used by the OPFOR units at all TRADOC centers and schools, the Combat Training Centers (CTCs), and in the TRADOC Common Teaching Scenarios. At the time of publication, the heavy and light packages accommodated the existing CTC OPFORs with relatively minor changes. The packages have the flexibility to adapt to the changing training requirements of the force-projection Army.

LIGHT OPFOR PACKAGE

The military forces of a number of third-world countries are the basis for the Light OPFOR. The authors designed the Light OPFOR to provide a force for training U.S. light forces. Although influenced by the forces of the Former Soviet Union (FSU), it is clearly unique. The authors used a certain degree of extrapolation, since most of these countries document their

doctrine poorly. Since this is OPFOR doctrine, and therefore not tied dogmatically to a single source country, the authors were able to articulate the doctrine more fully than in the past. Organizationally, the Light OPFOR takes a "building block" approach, which provides a great deal of flexibility.

Former Soviet systems provide the equipment baseline for the OPFOR. Two primary reasons were the basis for this decision. First, many potential adversaries equip mainly with the widely proliferated FSU systems. Second, the equipment listed in the *Light OPFOR Organization Guide* is representative of a unit's capability. Using these familiar, well-documented systems paints an immediate, concrete "picture," whereas listing generic descriptors would not. The *Light OPFOR Organization Guide* discusses the use of "gray" systems and substitution matrices in detail.

LIGHT OPFOR TACTICS HANDBOOK

TRADOC Pamphlet 350-17, *Light OPFOR Tactics Handbook* is the third volume of the capabilities-based Light OPFOR series of handbooks. This handbook provides the customer with a tactical overview of the Light OPFOR. The focus of the *Light OPFOR Tactics Handbook* is on the tactics of first-echelon truck-mounted, motorized infantry divisions and below, and how other arms, possibly including tanks, support them. For more detail on mechanized infantry and tank tactics, see the *Heavy OPFOR Tactics Handbook*.

The intent is to use TRADOC Pamphlet 350-17 with TRADOC Pamphlet 350-15, *Light OPFOR Operational Art Handbook* and TRADOC Pamphlet 350-13, *Light OPFOR Organization Guide*. Any differences between the organizations in the *Light OPFOR Tactics Handbook* and the *Light OPFOR Organization Guide* are intention. Future versions of the *Light OPFOR Organization Guide* will incorporate these changes. The intent of the *Light OPFOR Tactics Handbook* is to provide the trainer with a standardized flexible training opponent capable of stressing any or all battlefield operating systems of light U.S. forces. It provides the doctrine to support potential orders of battle built from the *Light OPFOR Organization Guide*.

The first group of topics covered in the *Light OPFOR Tactics Handbook* includes OPFOR military thought and structure; command and control; march; reconnaissance; offense; and defense. Further chapters discuss artillery, antitank, air, air defense, engineer, and logistics support. Also covered are the uses of electronic combat; chemical and smoke; and camouflage, concealment, and deception. The final group of chapters deals with combat under special conditions (in urban areas, mountains, deserts, forests, cold weather, and at night).

Structure

The *Light OPFOR Tactics Handbook* defines tactical doctrine and discusses how the capability-based Light OPFOR will fight in conventional combat. The Light OPFOR resides to a country referred to as the State. A scenario or training developer can construct the size and disposition of forces of the State, by following the State's organization for combat found in Chapter 2 and Chapter 3, TRADOC PAM 350-15 (*Light OPFOR Operational Art Handbook*).

The scenario or training developer should incorporate the number, type (by equipment), and size of forces taken from TRADOC PAM 350-13 (*Light OPFOR Organization Guide*) in building the OPFOR forces. The resulting OPFOR districts, divisions, brigades, and battalions would provide operational to tactical level training opportunities. The OPFOR State can to form up to an expeditionary army to conduct an operational-level offensive. It is a highly mobile, lethal force. The primary role envisioned for the expeditionary army is conducting extraterritorial offensive operations. Through a combination of operational maneuver and fires, the expeditionary army is capable of striking throughout the entire tactical-operational depths of the enemy. If the training or scenario developer finds himself requiring multiple standing divisions and armies, the Heavy OPFOR model may better fit the training needs.

After developing the specific size of OPFOR forces, the scenario or training developer can use this manual to train those personnel who will fight as the OPFOR. The manual provides insights on how the units down to company level fight. This manual builds flexibility in lower level combat activities (platoon/squad) by not being proscriptive in techniques and procedures. In most cases, this manual provides adequate information for the scenario or training developer.

How to Use This Book

The **table of contents** of this *Light OPFOR Tactics Handbook* outlines the main headings within its chapters. However, the detailed **index** at the end can guide the reader to the various portions of the text that deal with a given subject. The **glossary** at the end of the text gives the meanings of all abbreviations and acronyms used in this book. For definitions of key terms, the reader should refer to the **index**, where page numbers in bold type indicate the main entry for a particular topic, which often includes a definition of the indexed term.

Light Opposing Force (OPFOR)
Tactics Handbook

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Chapter 1
OPFOR Military
Thought and Structure

The OPFOR believes victory on the modern battlefield goes to the side that effectively applies principles of military art, accomplishes missions creatively using initiative, and firmly controls unit actions. The OPFOR must--

- Make optimum use of available forces and assets.
- Consider the effect of specific situation and conditions.
- Anticipate enemy maneuver.
- Preempt the enemy in actions that decisively affect success.

This chapter focuses on the tactical level of military art. For a more comprehensive discussion of OPFOR military thought, see Chapter 1 in the *Light OPFOR Operational Art Handbook*.

MILITARY THOUGHT

OPFOR **military thought** emphasizes the primacy of the political over the military aspects of war. The OPFOR has freely borrowed from a variety of Western and Eastern sources in an attempt to develop a cohesive doctrine that supports its political ideology and national goals. History plays a dominant role in OPFOR thinking. Partisan warfare has also figured prominently in several successful defenses against invaders over the years, and during the revolution that gave power to the current regime. As a result, OPFOR leaders have devoted much thought to the development of doctrinal concepts for warfighting that combine both conventional and partisan-type warfare. OPFOR doctrine incorporates the application of regular armed forces, in both conventional and partisan combat, with a strategy of universal armed resistance to invasion known as People's War.

OPFOR political and military planners are cognizant of their national and military capabilities and limitations. Therefore, they have taken a practical approach to the conduct of war and the doctrine that supports it. Throughout the doctrine, they address the possibility of conducting military action against weaker regional powers and against stronger powers from outside the region. However practical in application, OPFOR study of war falls within a classic hierarchy of military thought. (See Figure 1-1.)

To understand OPFOR military thinking, we must know the vocabulary it uses, its military theory, and its practical application. It has very precise definitions for terms such as **military doctrine, military science, military art, strategy, operational art,** and **tactics**. This chapter includes definitions of OPFOR military terminology, outlines the basic theories and goals espoused by the political and military planners, and discusses key concepts that strongly influence the application of their military thought.

MILITARY DOCTRINE

Military doctrine is the highest level of military thought. It is the State's officially accepted system of views on the nature of future war and the use of its armed forces. Doctrine has two closely interlinked aspects: the **political** and the **military**.
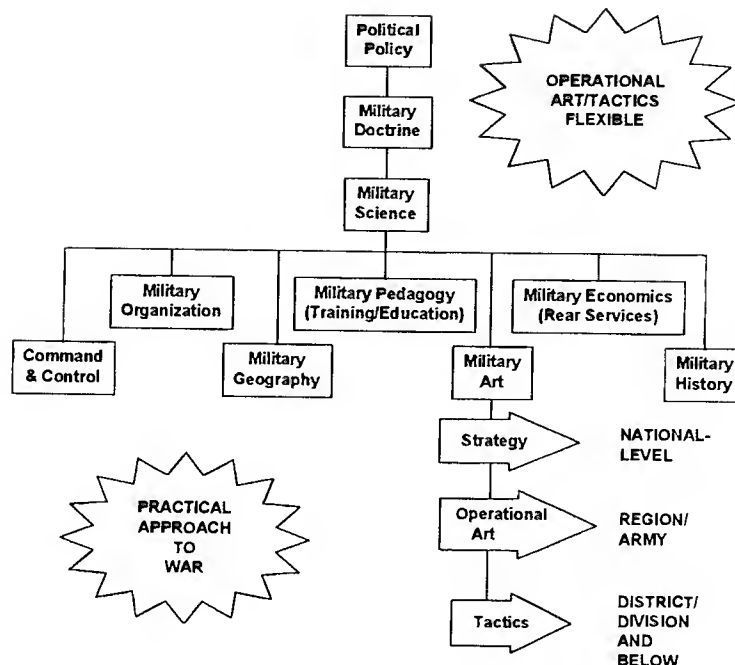
Figure 1-1. Hierarchy of OPFOR military thought.

Political Aspect

This aspect of doctrine brings together the political and military, expressing the national leadership's political policy as reflected in the government's military policy. Political objectives play the determining role in the development and refinement of military doctrine. Once handed down by the national leadership, doctrine is not open to debate. It has the effect of law. OPFOR doctrine consistently reflects three predominant political objectives stated by the State leadership:

Maintain and Strengthen the Revolution

This goal unifies the military and civilian sectors within a common struggle. This is critical to the country's success during wartime, given the reliance within its doctrine on the People's War.

Extend the Revolution Throughout the Region

Political leaders would like to conquer neighboring countries for two basic reasons: to unite ethnically homogeneous areas and to create buffer states. In peacetime, extending the revolution takes the limited form of advising guerrilla forces fighting in another country. The OPFOR realizes that extending the revolution through large-scale military operations would invite superpower involvement at a time when the State would be militarily vulnerable. This could jeopardize the OPFOR's ability to achieve the third objective (below).

Preserve and Defend the State

OPFOR doctrine is primarily one of **territorial defense**, focused on the preservation and defense of the nation. In spite of aggressive OPFOR rhetoric, the military geography of the State reflects the doctrine, dividing the country into military regions further subdivided into military districts. (Chapter 6 covers the basics of the defense.)

1-2

Military Aspect

The military aspect of doctrine is subordinate to the political, conforming to social and political aims. It encompasses the following matters pertaining directly to the OPFOR:

- Organizational development.
- Training.
- Combat readiness.
- Equipment types and numbers.
- Further development of military art.
- Improvements in command and control (C^2).

Thus, this aspect dictates the structure of the armed forces and the methods for employing them in either offensive or defensive combat.

Defending the State

Traditionally, the OPFOR has attempted to maintain a force structure that exceeds the requirements for defending the homeland. Maneuver unit disposition, coupled with a flexible support philosophy for the military regions and districts, is more than adequate to defend the homeland against any conventional regional threats.

Extraterritorial Offensive

The greatest weaknesses of the OPFOR structuring methodology would occur if the OPFOR formed an expeditionary army to conduct extraterritorial offensive operations. Forming and supporting this force would place a substantial drain on maneuver units within military regions and subordinate military districts, as well as the national asset pool and other arms of the armed forces. As a result, defense of the region that launched the expeditionary army would fall to comparably ill-equipped militia forces or to maneuver units taken from adjacent regions, or to a combina-

tion of the two. In the latter two cases, some units would be unfamiliar with the terrain. Additionally, launching the expeditionary army into an adjacent country would almost certainly invite the attention and possible intervention of a superpower.

Forms of Military Action

The basic tenets of OPFOR doctrine revolve around three forms of military action: direct, partisan, and combined. Regular army or militia forces conduct **direct actions** in a deliberate fashion. The goal is to defeat or destroy enemy forces by traditional means. Regular army units, militia units, or militia augmented by civilians conduct **partisan actions**, normally associated with the People's War. The aim is:

- To avoid decisive clashes for as long as possible.
- Expand the number of lower-level combat actions.
- Destroy the enemy by conducting raids on his weak points, such as logistics and rear areas.

Failure or weakening of direct actions signals the transition to **combined actions**. In this case, the primary participants of the partisan actions would be regular army forces that the enemy has bypassed, weakened, or attrited.

MILITARY SCIENCE

Military science is the aggregate knowledge concerning--

- The nature of wars.
- The general laws and principles of armed struggle.
- The organizational development of the armed forces.
- The forms and methods of preparing for combat actions of varying scope.
- Ways of averting wars.

It is the study and analysis of the diverse phenomena related to combat. Its purpose is to develop practical recommendations for achievement of victory in war. Unlike doctrine, it is subject to academic debate. Military science categorizes military knowledge along functional lines into various theories. These are: military art, military organization, military geography, military history, military pedagogy (training and education), military economics (logistics), and C^2. (See Figure 1-1.)

The OPFOR regards military art as the preeminent subcomponent of military science. Although the other areas are important parts of military science, the discussion in this chapter focuses on the theory and application of military art.

MILITARY ART

Military art is the theory and practice of conducting armed combat on land, sea, and in the air. It provides the conceptual framework for the development and application of military power. The three components of military art are each normally related to a specific level of combat activity:

- **Military strategy** (national-level).
- **Operational art** (military region- and army-level).
- **Tactics** (military district- and division-level and below).

Military art also concerns the interrelationships among these three components.

Military Strategy

Military strategy is the highest component of military art. Strategy determines the character of future war, identifies the strategic objectives necessary for victory, prepares the nation and armed forces for conflict, and includes the planning and conduct of war as a whole. Put simply, it concerns the preparation for and conduct of war to achieve national objectives. In accomplishing practical tasks, strategy follows the provisions of **military doctrine**. Strategy contains the basic means for achieving the political goals of war. Within the OPFOR C^2 structure, the Ministry of Defense and General Staff are responsible for developing military strategy. All State ministries and military organizations, as well as the civilian population, work under a unified military strategy.

Operational Art

Operational art is the second component of military art. It concerns the theory and practice of preparing for and conducting combined and independent operations by a military region or expeditionary army. Thus, it is the connecting link between strategy and tactics. At the two extremes of strategy and tactics, the definitions are more concrete. Traditionally, the operational level has been harder to define for the OPFOR, because it does not have a set organizational structure that simplifies its application. The command echelon considered **operational** is the one that integrates assets from the sister services. In most cases, this occurs at region and/or army level.

The OPFOR consists of four services:
- Ground Forces.
- Air Force (with subordinate Air Defense Command).
- Navy.
- Special Operations Command.

Unlike other armies, the OPFOR does not have a separate operational art for each of its services. Since the Ground Forces predominate the other services, the OPFOR's singular combined arms operational art focuses on the interaction between the Ground Forces and its sister services.

Operational art does not exist only in wartime; like strategy and tactics, it develops continuously. Employment of new weapons and military equipment, along with a growth in the intensity of warfare, impact on the formulation of operational art.

Understanding what the OPFOR means by tactics, operations, and the related words that it associates with each concept is important. To the OPFOR, the words **operation** and **operational** imply that the activity involves at least a military region or an expeditionary army. **Tactics** and **tactical** refer to combat actions at military district or division level and lower. Divisions fight **battles**; an army conducts **operations**. First-echelon divisions usually pursue tactical missions in the enemy's tactical depth. An army, using its second-echelon division(s), pursues operational missions in the enemy's operational depth.

Tactics

Tactics, the third component of military art, deals with the theory and practice of combat at military district or division level and lower. There are specific tactical principles for each type of unit, weapon, and combat situation. Military tactics occupies a subordinate position with respect to operational art and strategy.

Tactics is the most dynamic area of military art. It is constantly evolving, along with changes in weapons, military equipment, the quality of troop personnel, and the art of leading troops. With the advent of new weapons, tactics must immediately begin to reflect their possible impact on methods of conducting combat actions. As new weapons appear in the OPFOR, one task of tactics is to determine the optimum combination of methods for their employment and for their interworking with other weapons in combined arms battle. Tactics must also include methods of protec-

tion against such weapons when employed by the enemy.

The practice of tactics encompasses the activity of commanders, staffs, and troops in preparing for and conducting battle. It includes--

- Updating situation data.
- Decision making.
- Communicating missions to subordinates.
- Organizing coordination of forces and assets.
- Comprehensive support of battle.
- Battle planning.
- Preparing troops for battle.
- Conducting combat actions.
- Exercising C^2.

The importance of tactics is that it comes closest to practical troop activity. Its specific level of development and the quality of tactical training of officers, staffs, and troops largely predetermine success or failure in battle. In the **offense**, tactics works out methods of preparing and conducting the attack under various conditions. This includes--

- Transitioning from the defense.
- Penetrating enemy defenses.
- Repelling counterattacks.
- Conducting encirclement.
- Consolidating captured lines or positions.
- Conducting meeting battles or pursuit.

In the **defense**, tactics works out methods of organizing and conducting battle in--

- Repelling enemy invasion.
- Holding important lines and positions.
- Conducting counterattacks.
- Reacting to encirclement and withdrawing.

There are also special variants of tactics for conducting either offensive or defensive actions under special weather or terrain conditions.

Interrelationships

All OPFOR discussions of military art emphasize the interaction among its three components: strategy, operational art, and tactics. These interrelationships are becoming more multifaceted and dynamic. Strategy plays the predominant role with respect to the other components of military art—operational art and tactics. It defines the tasks and the methods of combat actions on an operational and tactical scale. Operational art determines the tasks and directions of development of tactics. Based on strategic requirements, operational art determines effective methods of using available military resources to achieve strategic goals. In turn, plans emanating from operational art determine tactical actions.

Separating OPFOR tactics from operational art is often difficult. The maneuver divisions and brigades are the tactical maneuver elements used by an expeditionary army or military regions to achieve their operational missions. The two concepts are closely related in OPFOR military thinking and planning.

OPFOR tactical commanders understand the need to always keep the operational goal in mind. The overriding goal of the combined arms offensive is to turn tactical success into operational success rapidly through a combination of massive fire, maneuver, and deep strikes. Similarly, tactical and operational successes contribute to the accomplishment of strategic tasks.

TACTICAL PRINCIPLES

In OPFOR doctrine, tactics is subordinate to operational art. Success at the operational level is the key to victory. Therefore, it is not surprising that OPFOR tactical principles are quite similar to the principles of operational art. Also, OPFOR tactical principles do not differ significantly from the published principles of other armies. As general principles, they are theoretically all of equal importance. However, certain principles may be more valuable in one situation and others in another situation. Some principles are overlapping or interrelated with others. They include the following:

Initiative

Success in battle goes to the side that conducts itself more actively and resolutely. The goals of a campaign or battle and the methods devised for their attainment must reflect initiative. The success of these plans rests with the ability of higher-echelon commanders to make bold decisions, then act resolutely to implement those decisions. As the development or retention of initiative relies on the planning and leadership of higher-echelon commanders, so does it also depend on the individual and collective actions of soldiers at the lower levels. The general theoretical statements above touch on the three basic definitions of initiative:

- Initiative which is synonymous with offense and offensive action.
- Initiative which means freedom of maneuver.
- Initiative which refers to actions by individuals.

Of the three, OPFOR commanders rely more on individual initiative. This requires aggressiveness, decisiveness, and firm, continuous C^2.

Aggressiveness

To succeed in combat, commanders must be aggressive, bold, and resourceful. Units must act with maximum persistence, both night and day, in any weather. They must build up efforts in a timely manner on an axis where the OPFOR has achieved success. There should be no pauses when shifting efforts from one axis or sector to another. Aggressiveness relates closely to initiative. At the tactical level, this principle determines the OPFOR preference for the offense.

Decisiveness

Decisiveness of battle goals comes from the OPFOR's mission and the increased capabilities of modern warfare. Commanders must ensure this by determining the methods, combat actions, and missions that permit maximum possible results in the shortest possible time, with the fewest losses. The goal is to put the enemy in a position that--

- Keeps him from making effective use of his weapons.
- Denies him sufficient time to organize combat actions.
- Puts continuous pressure on his C^2 system.

This requires initiative and aggressive, determined actions, as well as bold use of unexpected tactics.

Effective C^2

To be effective, OPFOR C^2 must be firm and continuous. Effective C^2 defines the goal of battle and establishes and maintains effective communications. It promotes sound battle plans, and ensures their proper execution. Firm, continuous C^2 achieves planned goals and assigned missions contributing to victory with the fewest possible losses and in the shortest possible time. This involves--

- Constant knowledge of the situation.
- Timely personal decision making and persistent application of the decision.
- Precise assignment of missions to subordinate units.
- All commanders' initiative and personal responsibility for their decisions.
- Proper combat employment of forces and assets.
- Maintaining stable communications with subordinate units.
- Precise organization and assurance of survivability of C^2 facilities.

The commander's decision is the basis for C^2 and should specify the goal of battle, its concept, and methods for achieving the goal. The decision should conform to existing capabilities and conditions. Commanders' high professional preparedness is necessary for firm, competent C^2.

Maneuver

Maneuver of units, strikes, and fire is one of the most important elements of battle. Its essence is the swift, organized displacement of troops to important axes and sectors in order to create a more favorable ratio of forces and assets there. Aggressive maneuver can compensate for a shortage of forces and assets, redeploying them quickly to threatened sectors and to new positions or lines. The OPFOR recognizes envelopment as the most successful form of maneuver. Maneuver by air--vertical envelopment using helicopters--is becoming more common under modern conditions. Maneuver by fire is even faster than maneuver by forces. The range and effectiveness of modern weapons make this increasingly more important. Maneuvering of roving weapons and fire ambushes is particularly effective in the defense.

Maneuver allows the commander to strike the enemy when and where necessary. Maneuver permits seizing and holding the initiative, disrupting the enemy concept, and successfully conducting battle in the changed situation. The OPFOR must accomplish the maneuver covertly, to the enemy's surprise, and in a timely manner. Commanders should use the optimum number of forces and assets to execute it in a minimum of time.

Mobility

Mobility of combat forces facilitates the success of any battle or operation. The spatial scope of modern combat, the absence of solid and contiguous fronts, and the depth of the modern battlefield demand mobility. A high degree of mobility enables forces to use combat power with maximum effect.

Mobility and speed are not synonymous. Depending on **enemy, terrain, and weather conditions**, the most mobile force may be light, motorized, mechanized, or a combination thereof. By taking these considerations into account, OPFOR planners have enhanced the overall capabilities of maneuver units. Thus, units garrisoned within a district should normally be able to fight in that terrain type with a high degree of mobility. These same considerations drive what types of combat support and combat service support are organic within the regions and districts, as well as what types they would receive from the General Staff during wartime. This **tailored mobility** also applies to the OPFOR's use of specific equipment. Many pieces of equipment considered obsolete by other armies, such as some older towed artillery pieces, fit easily within the mobility requirements of light and motorized forces and are well-suited for those support roles.

Tempo

Tempo is the rate of speed of military action; it is inseparable from mobility. Controlling or altering that rate is critical to maintaining the initiative. As with mobility, tempo and speed are not synonymous. Tempos can be either fast or slow, adjusted by commanders to ensure synchronization of assets.

Generally, a quicker tempo is preferable during **offensive** combat. Maintaining constant pressure on the defending enemy prevents recovery from the initial shock of the attack, repositioning forces, and bringing up reserve forces from the depth in a timely manner. Based on successful reconnaissance and probing actions, the attacker quickly shifts his strength to widen penetrations and exploit that success. The key to success is constant, relentless pressure, which denies the enemy time to identify the attacker's main effort and concentrate his forces to blunt that effort.

OPFOR military planners emphasize tempo, because they recognize the potential problems with synchronization during **offensive** combat. No single region has the number of mobile forces required to form an expeditionary army. The region used as a base for the army's mobilization would receive standing mobile divisions from other regions at the direction of the General Staff. Perhaps it would also mobilize reserves within the region in order to constitute the required forces. This composite force would never have fought as an army before, and its subordinate formations would vary substantially in equipment and training.

In **defensive** combat, actions should focus on disrupting the enemy's offensive tempo by denying him the ability to mass forces or move these forces with the requisite speed. Much of the responsibility for this disruption would fall to partisan actions conducted by fragmented and/or bypassed units, both regular army and militia. As a rule, these small unit raids would focus on C^2 elements, lines of communication, and supply facilities.

Surprise and Deception

Surprise can decisively shift the balance of combat power. It can result from mobility, speed, or the bold use of unexpected tactics. However, one of the key factors is always deception.

Surprise

Achieving surprise can gain a significant, even decisive, advantage over the enemy while preserving one's own combat effectiveness. A surprise attack can inflict substantial losses on the enemy and lower his morale. It can confuse him, cause panic, paralyze his will to resist, disrupt his C^2, and reduce his overall combat effectiveness. Thus, it can allow success without an overwhelming superiority of forces. It can create favorable conditions for victory even over an enemy of superior strength.

Surprise involves actions unexpected by the enemy in terms of one or more of the following:
- The method of employing forces and assets.
- Their number and size.
- The time.
- The place.
- The direction.

It is possible to achieve surprise by choosing conditions in which the enemy may least expect certain actions or the employment of certain weapons.

Knowledge of the enemy's plan is paramount. Likewise, denying the enemy the ability to conduct good intelligence operations is critical to this effort. Being unpredictable is helpful, but not at the expense of sound application of doctrinal principles. Surprise delivers victory as a result of timing, boldness, and concentration of forces masked by feints, ruses, demonstrations, and false communications.

Surprise is the result of measures designed to--
- Maintain secrecy regarding the concept of the battle.

- Exploit factors such as terrain, weather, season, and time of day within the plan.
- Mask intentions and preparations through extensive use of concealment and disinformation.
- Accurately determine the main effort, using extensive reconnaissance and counterreconnaissance.

OPFOR commanders believe surprise is possible, even with modern advances in reconnaissance and intelligence collection capabilities. They feel it is realistic to conceal not only the scope of the combat action, but the location of the main effort and the time it will begin. Even partial surprise can be effective.

The effects of surprise are temporary. Therefore, it is important to exploit these effects immediately. At the same time, it is important to preclude surprise by the enemy. This involves continuous reconnaissance, forecasting enemy actions, and maintaining constant readiness to swiftly oppose the enemy and disrupt his planned actions.

Deception

To achieve surprise, the OPFOR employs an organized plan for camouflage, concealment, and deception (CCD). The OPFOR's ultimate deception goal is to mislead the enemy about--
- The presence and position of forces.
- Their composition, combat readiness, and actions,
- The plans of the command authority.

The simultaneous use of deception practices against all hostile reconnaissance and intelligence-gathering assets achieves the greatest effect.

Deception can mislead the enemy regarding the true status and actions of OPFOR troops. Deceptive actions must be secretive and convincing from the standpoint of plausibility. This can force the enemy to accept false measures and false maneuver for real ones and real ones for false ones or not allow the enemy to detect them at all. (For more detail on CCD, see Chapter 15.)

Coordinated Efforts

Modern warfare is truly a combined arms battle. Success requires the coordinated efforts of all forces participating in a battle. The maneuver commander must understand the capabilities of all the types of troops likely to be under his control. He must combine their strengths, ensuring efforts focus on the same objectives, and coordinate their missions, axes, deployment lines, and timings. He must organize the coordination of efforts of all forces and support assets to ensure mutual and complementary support. Detailed plans and rehearsals ensure that each element fully understands its mission relative to the overall combined arms battle. This permits the commander to display reasonable initiative in the course of battle.

Regular Ground Forces

For the ground forces, coordination is more successful within standing units, such as standing divisions and separate brigades, which exist and train as a force during peacetime. Due to their standing C^2 structure, support from other services of the armed forces integrates more smoothly. Regions and districts that create additional tactical headquarters during wartime have more difficulty for three reasons:

- The tactical headquarters, since it normally does not exist during peacetime, is unaccustomed to integrating support from other arms of service.
- Forces within the region may vary; for example, a region might have two districts composed of separate brigades and one district containing a standing division.
- Region missions may also require mobilizing reserve units within the region; this adds another layer of integrating forces unaccustomed to fighting with active ground forces.

Regular and Unconventional Forces

It is especially important to coordinate the efforts of regular army units with those of unconventional forces. For example, the **special operations forces** and **commando units** of the Special Operations Command (SOC) temporarily assign liaison officers to any regular army units with which they must interface. Integration of **militia** is only as good as its ability to form as a unit. Its actions may be relegated to partisan fighting in the rear. **Partisan** activities by weakened, fragmented, or bypassed regular army units can play a large part in the success of the overall battle. However, success depends largely on the initiative and daring of small unit leaders and their understanding of how their actions can contribute to the overall plan. It may be possible to loosely coordinate partisan activities to support the overall plan, but not to finely tune them in time or direct cooperation with regular units. The same is true of **guerrilla** activities taking place in a third country, with advisors for these forces controlled through the SOC. While they may provide general support, it is not timely or in direct support of ongoing actions by conventional forces.

Concentration of Main Effort

Concentration has always been a basic OPFOR principle, but it no longer means just physically massing troops on the main axis. Such groupings are too vulnerable to nuclear strikes and high-precision weapons. It is now essential for troops to remain dispersed for as long as possible, concentrating at the decisive point for the shortest possible time. Concentration relates to a particular time and place. Overwhelming, across-the-board superiority is not necessary and is rarely achievable.

Massing

The essence is for the OPFOR to use the bulk of its forces and assets (and its most effective weapons) on the main axis at the decisive moment. Methods of massing forces and weapons vary:

- Covert movement/deployment at night prior to decisive battle (the preferred method).
- Daytime movement/deployment, using covered or concealed routes.
- Movement/deployment during the period of fire preparation.
- Maneuver and redeployment from one axis to another, in the course of battle.
- A concentration of fire with or without changing firing positions.
- Displacement of the particular types of weapons (e.g., tanks or antitank weapons) that are capable of determining victory in a given situation.

This massing must occur covertly and with carefully conceived disinformation. Otherwise, the enemy could maneuver sufficient assets into the threatened sector and also deliver fire strikes against the concentrating forces and disrupt the planned concept of battle.

A force that dissipates its assets equally across the entire frontage cannot achieve victory; this is equally true in the offense and in the defense. The concentration essential to achieving and exploiting success can occur by massing effects without massing large formations. In the offense, attacking commanders must manipulate the focus of their forces (as well as the enemy's) through the combination of dispersion, concentration, deception, and attack. Commanders should designate the main effort, allocate or focus the forces to support it, and conceal this effort until it is too late for the enemy to react.

The OPFOR attempts to concentrate firepower to destroy enemy formations piecemeal in both offensive and defensive combat. For example, when an enemy force deploys in several columns from several directions, the defending OPFOR can concentrate firepower in an attempt to destroy one enemy column first. Simultaneously, it can tie down his other columns with small forces in order to prevent reinforcement of the column under attack.

Tailoring

Adherence to this principle is evident in the peacetime organization of forces, allocation of forces in preparation for war, and their tactical and operational application during wartime. The OPFOR tailors the maneuver forces garrisoned within districts to the districts' missions; the same is true of combat support and combat service support assets. The OPFOR does not have the number of support units needed to provide equal support to all maneuver elements. Only in exceptional cases would a region or district have an adequate number of support units during peacetime. This would usually apply to forces with offensive contingency missions or positioned

to respond to a perceived threat to that region or district. In most cases, however, a region or district would require reinforcement from higher-level combat support and combat service support units. Such units come from a pool at the national level. The General Staff allocates them to regions based on their mission. Regions then allocate these assets to their subordinate districts using that same rationale.

Maintaining Combat Capability

Commanders must ensure that their units are capable of performing assigned combat missions. This responsibility starts with establishing and maintaining high combat readiness in preparation for battle. Once the battle begins, the preservation and timely restoration of unit combat effectiveness are essential to success. To accomplish these goals, the commander must organize comprehensive support of battle.

Combat Readiness

The combat readiness of units determines the timeliness of their engagement and the creation of conditions for tactical victory. The essence of this principle is the capability to enter battle and successfully perform assigned missions at any time, in an organized manner, within prescribed time periods. The commander must ensure that his unit maintains this constant readiness. Highly intense, quality training under combat-like conditions is critical to OPFOR combat success.

Preservation of Combat Effectiveness

In the course of battle, OPFOR commanders must maintain the force's combat effectiveness at a level that enables successful accomplishment of the mission. The mainte-nance and restoration of combat capability are vital in modern combat. Many factors can affect combat capability. Modern weapons, for example can quickly destroy the combat capability of a force. The ability to maintain combat capability and to restore it quickly, when required, can mean the difference between success and failure.

Timely restoration of combat effectiveness includes--
- Restoring disrupted C^2.
- Identifying losses.
- Updating missions for continuing battle by units that have preserved combat effectiveness.
- Restoring damaged arms and equipment.
- Replacing personnel.
- Maintaining the personnel's high morale and psychological stability.

OPFOR commanders employ four basic measures for preserving combat effectiveness. They aggressively conduct special combat actions aimed at **disrupting or weakening an enemy's ability to mass destructive fires**. To achieve this goal, the OPFOR emphasizes aggressive reconnaissance by all available means to locate and identify the enemy's fire systems. Closely tied to this is **protection against weapons of high destructive potential**. It reflects the OPFOR's concern with high-precision weaponry and the actions it must take to conceal its forces from them. The OPFOR believes it can accomplish this through the dispersal and concealment of forces and the periodic shifting of force disposition. **Maintenance of combat readiness** refers to the high political, moral, and physical state of the troops, the maintenance of equipment and weapons, and the provision of the materiel needed. The OPFOR considers the high political and moral state of individual troops to be of utmost importance. It has established po-

litical sections at every echelon of the armed forces, which work diligently to instill a high degree of political and moral awareness in the troops. Chapter 12, Logistics, details how the OPFOR maintains equipment and weapons, provides for its forces, and **restores its combat effectiveness**.

Comprehensive Support

Comprehensive support of the battle is the organization and accomplishment of measures that maintain high troop combat readiness, preserve combat effectiveness, and create favorable conditions for successful performance of the combat mission. Commanders must organize support during preparation for battle and ensure it continuously throughout the course of the battle. Comprehensive support has two aspects:

- **Combat support** includes reconnaissance, defense against weapons of mass destruction and high-precision weapons, CCD, engineer support, chemical support, and security.
- **Combat service support** includes the supply and maintenance of all types of combat systems, equipment, and ammunition. It also concerns the individual needs of troops, food, quartering, clothing, pay, and medical support.

STRUCTURE OF GROUND FORCES

The Ground Forces are the premier branch of the armed forces. Like the Navy, Air Force/Air Defense Command, and Special Operations Command, they are subordinate to the General Staff/National Headquarters. The *Light OPFOR Organization Guide* provides detail on organizational structures and complete equipment totals for most units.

Military Regions

Military regions are geographical entities which delineate the territorial responsibilities and disposition of the country's armed forces. Each region has a number of subordinate military districts. The number varies from two to four districts. Three districts is the norm.

Maneuver Assets

In peacetime, the maneuver assets located within a military region are subordinate to the military districts. This is true, whether the assets are separate brigades, divisions composed of divisional brigades, reserve units, or militia units. For example, a region could have two districts composed of separate brigades, and one district with a standing division composed of divisional brigades.

Combat Support Assets

In peacetime, the region may or may not have many combat support organizations, depending on its wartime contingency missions. Most regions have engineer and signal organizations during peacetime. During the transition to war, the General Staff allocates additional assets from the national level, based on the region's mission. For example, a region with the mission to form an expeditionary army would receive assets first to form army-level organizations. Regions with defensive missions would receive assets based on the anticipated threat to that region.

Combat Service Support Assets

Regardless of contingency mission, most regions have materiel support and maintenance support organizations during peacetime. See the *Light OPFOR Operational Art Handbook*.

Military Districts

Military districts are geographical entities which delineate the territorial responsibilities and disposition of forces subordinate to the military region. Forces subordinate to the district can vary widely. As a rule, there is no standard template for a district's composition. However, the peacetime composition is a good indicator of probable wartime missions.

Maneuver Assets

Districts generally contain one or more separate brigades but may have a standing division. Standing divisions are more likely to exist in districts along an international border, in districts that contain historically threatened avenues of approach, or around strategically important cities or facilities. In such cases, the district commander is the division commander. A basically rural, mountainous district with no major population centers, for example, may have only a single separate light infantry brigade, with little or no additional combat support and combat service support. A district astride a major avenue of approach, or one that contains several major population/industrial centers, may contain several motorized or mechanized brigades. In addition to these active duty forces, districts also have reserve and militia units garrisoned within them. (See the separate section on "Militia" below.)

Combat Support and Combat Service Support Assets

In peacetime, the amount of combat support assets garrisoned within the district depends on its anticipated wartime mission. Many districts have organic artillery, air defense, and antitank units. Maneuver force composition determines whether these assets

would be towed or self-propelled. Some districts also have the following types of units:

- Reconnaissance.
- Electronic combat (EC).
- Commando.
- Engineer.
- Materiel support.

During the transition to war, districts receive additional support assets allocated from the region; some of these may have come originally from the national level.

Expeditionary Army

The OPFOR is capable of fielding a single expeditionary army, composed of mobile divisions, for purposes of conducting large-scale extraterritorial offensive operations. The army formed for this specific purpose uses a region and its subordinate districts as a base. Ground forces within these districts may be standing divisions, separate brigades, reserve divisions, or a combination.

Maneuver Assets

The expeditionary army consists of three to five mobile divisions. An army may also have separate infantry or tank brigades under its control. The divisions come from three basic sources: standing divisions, which exist during peacetime; divisions formed using a separate brigade as a mobilization base; and divisions mobilized entirely from the reserves. There may be some standing divisions already garrisoned within the military region's subordinate districts. The region used as a base for army mobilization would receive additional standing divisions from one or more other regions at the direction of the General Staff. Districts composed of separate brigades may use one of these brigades as a mobilization base for a division and constitute the remainder of maneuver forces from the reserves. Units

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composing a reserve division mobilize from within the region's subordinate districts. The army could include separate brigades directly subordinate to the army commander. These brigades could come from a subordinate district's forces, or from another region at the direction of the General Staff, or from mobilized reserves.

Combat Support and Combat Service Support Assets

An expeditionary army receives national-level assets from the General Staff in the same way a military region does. As with maneuver forces, tailored support assets match the army's mission.

Divisions

Regardless of origin, there are three different types of divisions: **light, motorized,** and **mechanized** infantry. Figure 1-2 highlights the structural differences among the three types. Light and motorized infantry di

visions are more common than mechanized infantry divisions. Infantry units within the divisions are divisional light, motorized, or mechanized infantry brigades. Normally, each division has three infantry brigades of the same type.

Maneuver Assets

Standing divisions have subordinate maneuver brigades garrisoned within the district respective to their wartime mission. At the direction of the General Staff, the district mobilizes reserve brigades from reservists within the district. The OPFOR reserve system centers around the maneuver brigade. Therefore, the cadre would comprise the command and staff elements at brigade level and of the brigade's subordinate units, as well as certain technical positions within each of these units. All types of brigades previously discussed exist within the reserves. Reserve separate brigades fight as part of a district's forces; reserve divisional brigades fight as part of a division.

	MECH INF DIV	MTZD INF DIV	LIGHT INF DIV
	DIV HQ	DIV HQ	DIV HQ
MECH INF	BDE(3x)	-	-
MTZD INF	-	BDE(3x)	-
LIGHT INF	-	-	BDE(3x)
TANK	BN	(Possibly a BN)	(Possibly a BN)
ARTY	SP REGT	TOWED REGT	TOWED REGT
AD	REGT(SAM/AA Gun)	REGT(AA Gun)	REGT(AA Gun)
AT	ATGM BTRY (or AT BN)	ATGM BTRY (or AT BN)	ATGM BTRY
RECON & EC	BN	BN	BN
ENGR	BN	CO	CO
SIGNAL	BN	CO	CO
CHEM DEF	CO	CO	CO
MAT SPT	BN	BN	BN
MAINT	BN	BN	BN
MEDICAL	BN(or CO)	CO	CO

Figure 1-2. Maneuver division structures.

Combat Support and Combat Service Support Assets

Standing divisions have their division-level combat support assets garrisoned in relation to their wartime mission. Garrisons for combat service support assets would be near the division headquarters.

For reserve divisions, combat support and combat service support assets for formations above brigade level would come from the General Staff or be mobilized from reserves. Reserve combat support units generally have older equipment than their active duty counterparts.

Infantry Brigades

There are three types of infantry brigade: **light**, **motorized**, and **mechanized**. Each type has two variants: separate or divisional. Figure 1-3 highlights the differences in the various brigade structures.

Separate infantry brigades, designed to fight independently, are normally organic to the district. They would never be subordinate to a division as separate brigades. Structured to provide their own combat support and combat service support, they are not as dependent on a higher headquarters as are divisional brigades. They are a more effective, lethal, and versatile organization than the standard divisional brigade. Within an expeditionary army, they may take the place of one or more of the divisions. They may serve as a maneuver base for a district forming a division, but during this structural transition they relinquish the assets that distinguish them from divisional brigades. For example, the robust reconnaissance companies of separate brigades may retain one platoon normally found in a divisional brigade. Their other platoons could contribute to creation of the reconnaissance and EC battalion normally associated with the division.

	TANK	MECH INF BDE		MTZD INF BDE		LIGHT INF BDE		
	BDE	SEP	DIV	SEP	DIV	SEP	DIV	MILITIA
	BDE HQ	BDE HQ	BDE HQ	BDE HQ	BDE HQ	BDE HQ	BDE HQ	BDE HQ
MECH INF	BN	BN(3x)	BN(2x)	-	-	-	-	-
MTZD INF	-	-	-	BN(3x)*	BN(3x)*	-	-	-
LT INF	-	-	-	-	-	BN(3x)	BN(3x)	BN(2x)
TANK	BN(3x)	BN	BN	-	-	-	-	-
HOW	SP BN	SP BN	SP BN	BN	-	BN	-	-
MORTAR	-	-	-	BTRY	BN	BTRY	BN	BTRY
AD	BTRY	BTRY	BTRY	BTRY	BTRY	BTRY	BTRY	BTRY
AT	-	ATGM BTRY (or AT.BN)	ATGM BTRY	BN	ATGM PLT	BN	ATGM PLT	-
RECON	CO	CO	PLT	CO	PLT	CO	PLT	PLT
ENGR	CO	CO	CO	CO	CO	CO	CO	-
SIGNAL	CO	CO	CO	CO	CO	CO	CO	-
CHEM	PLT	PLT	PLT	PLT	PLT	PLT	PLT	-
MAT SPT	CO	CO	CO	CO	CO	CO	CO	-
MAINT	CO	CO	CO	CO	CO	-	-	-
MEDICAL	PLT	PLT	PLT	PLT	PLT	PLT	PLT	-
* In some brigades, one of these infantry battalions may be mechanized rather than motorized.								

Figure 1-3. Maneuver brigade structures.

Divisional infantry brigades are always part of a division. They do not have the combat support and combat service support structure to fight independently.

Tank Brigade

The tank brigade is always subordinate to the district, region or expeditionary army. Since it is never part of a division, the distinction as a "separate" brigade is superfluous. For the tactics of this brigade, see the *Heavy OPFOR Tactics Handbook.*

Tank Battalion

Tank battalions **in a tank brigade** normally have 22 tanks each. The exception is that tank battalions of a tank brigade in the Capital Defense Force may have 31 tanks. In either case, the battalion has a simple structure

consisting of a battalion headquarters, three tank companies, and a headquarters and service platoon. The difference is that the standard tank company has only 7 tanks (2 platoons of 3 tanks each, plus one tank for the company commander). In the 31-tank battalion, each company has 10 tanks (3 platoons of 3 tanks each, plus one tank for the company commander).

Separate Tank Battalion

A tank battalion **subordinate to a division or to a mechanized infantry brigade** has the standard 22-tank structure. However, it has additional combat support and combat service support elements to allow it to fight more independently, without the support of a parent tank brigade. (See Figure 1-4.)

	TANK BN	SEPARATE TANK BN	MECH INF BN	MTZD INF BN	LIGHT INF BN
	BN HQ	BN HQ	BN HQ	BN HQ	BN HQ
TANK	CO(3x)	CO(3x)	-	-	-
MECH INF	-	-	CO(3x)	-	-
MTZD INF	-	-	-	CO(3x)	-
LIGHT INF	-	-	-	-	CO(3x)
MORTAR	-	-	BTRY	PLT*	PLT*
AIR DEFENSE	-	-	PLT	PLT*	PLT*
ANTITANK	-	-	PLT	PLT*	PLT*
AGL**	-	-	(Possible PLT)	(Possible PLT)*	(Possible PLT)*
SIGNAL	-	SECT	PLT	-	-
SERVICE	HQ & SVC PLT	SUPPORT PLT	PLT	-	-
MAINT	-	SECT	PLT	-	-
MEDICAL		SECT	SECT		

* Subordinate to the battalion's weapons company.
** Some infantry battalions may have an automatic grenade launcher (AGL) platoon, or perhaps only an AGL squad.

Figure 1-4. Maneuver battalion structures.

Infantry Battalion

The bulk of the maneuver forces consists of infantry battalions. As with brigades, these battalions come in three types: light, motorized, and mechanized. Figure 1-4 highlights the differences among the three battalion structures. The main difference is that motorized and light infantry battalions consolidate their mortar, air defense, and antitank platoons into a weapons company. The same is true of the automatic grenade launcher platoon, if present. Those battalions also lack the support of signal, service, maintenance, and medical units found in a mechanized infantry battalion. Of course, there is also a difference in the vehicles that transport the infantry.

Militia

The militia helps fulfill a basic tenet of the People's War, that of linking the entire population into the defense of the country. Every village, farm, cooperative, or factory has a militia unit of some kind. In the event of an invasion, militia forces should defend key installations in their towns and cities; such installations include factories, bridges, roads, and railways. The State government assumes that militia units can perform adequately, due to rudimentary military training, their familiarity with local terrain, and their motivation to protect the local infrastructure. In some instances, they receive training for more complex but very specific missions, such as defending airfields and ports. These forces, quite literally, fight for their farms and homes. Predominantly militia personnel consist of--

- Workers and peasants.
- Over-age reservists.
- Medically-retired soldiers.
- Women.
- Young men not yet old enough for military service.

One use of the militia may be to reconstitute heavily attrited regular army units and support the regular army through activities such as fortifications and obstacles, communications, and logistics support. Missions also include--

- Defense against airborne/heliborne assaults.
- General logistics.
- Rear area security missions.
- Ambushes and raids of enemy C^2 facilities, logistics facilities, and lines of communication.

In the defense, militia units can harass and delay enemy troops. However, their integration into the defensive structure of a regular army unit (i.e., a militia light infantry battalion serving as reconstitution for a regular army infantry brigade) would occur only as a last resort. Their ability to engage in integrated offensive combat is also questionable, because of their lack of training and poor mobility.

Maneuver Assets

The largest militia formation is a modification of the light infantry brigade (see Figure 1-3). Depending on the size of its population centers, a military district may or may not be able to constitute a brigade-sized militia force. Some districts have only one militia light infantry battalion. Even in more populous districts that can field larger formations, militia may fight at the squad, platoon, and company levels, depending on the amount of time the units have had to prepare and mobilize.

Combat Support and Combat Service Support Assets

A brigade-sized militia force normally has an air defense battery and a reconnaissance platoon under brigade control. It could receive additional combat support and combat service support assets from the district, but this would be extremely rare.

PEOPLE'S WAR

If insufficient forces exist for the OPFOR to defend against an invader by conventional means, its leadership plans to integrate partisan actions in an attempt to prevent occupation. This aspect of doctrine, termed **People's War**, envisions an unconventional war fought by thousands of small units and individuals against a foreign invader, eventually forcing the invader to withdraw from State territory. This aspect of OPFOR doctrine embodies concepts employed against the United States in Vietnam.

Strategic Objective

The strategic objective of the People's War is to prevent occupation of the State. It involves defeating the enemy through a series of small combat actions aimed at attrition of his forces, or destruction of his C^2 elements, lines of communication, or logistical support.

Principles

The principles of People's War are as follows:
- The nation must support the war.
- The war must take place in the interior of the State.
- The war must extend over the entire territory of the State.
- The war cannot hinge on a single battle.
- Irregular, difficult, and inaccessible terrain is desirable.

Partisan Aspect

Although People's War is a much broader and more comprehensive term, **partisan fighting** conducted in support of offensive and defensive conventional operations involves small units in tactical combat. (See Chapter 13, Partisan Operations, in the *Light OPFOR Operational Art Handbook* for more detail.) Partisans may or may not coordinate their actions with concurrent conventional military actions.

Participants

Participants generally fall within one of three groups, each with distinctly different abilities. These are: regular army units, militia units, and civilians augmenting either type of unit.

Regular army units. Invading enemy forces have bypassed, fragmented, or otherwise attrited these units to less than 20 percent of their original combat potential. Once units reach 20 percent of their original combat potential, the OPFOR plans for transition to partisan fighting. Small units can hide, allowing enemy forces to bypass them, with the specific intent of conducting partisan actions. These forces range from squad- to company-size, and vary in organizational integrity. A company, for example, may be either a true company or an ad hoc grouping composed of the remnants of several organizations; the latter circumstance would affect its ability to fight cohesively. As a rule, regular army units conducting partisan warfare achieve a degree of integration into the conventional fight. This is by virtue of their familiarity with the mission and plans of the higher headquarters. These forces are the most likely to conduct actions against smaller enemy combat units.

Militia units. Invading enemy forces have bypassed, fragmented, or heavily attrited these units, or have not allowed them time to fully mobilize. These units normally range from squad- to company-size, although some could be battalion-sized, depending on degree of mobilization. Effectiveness and degree of integration with the conventional fight vary widely. For example, mobilized militia companies or company-sized groupings previously integrated into the conventional fight, would be more effective as partisans than unmobilized units fighting without knowledge of the conventional forces' mission and plans.

Civilians, augmenting either regular army or militia forces. Enemy forces have bypassed these civilians' homes. Their degree of integration is normally low, due to their generally poor equipment and limited knowledge of ongoing military actions. Thus, targets consist primarily of enemy logistics or C^2 facilities.

Ad hoc organizations. Partisans organize their available forces based on the mission. Most partisan units fighting in support of conventional combat actions are ad hoc organizations. Battalion- or company-sized units could include any or all of the participant groups listed above. For example, a partisan infantry 'battalion" could consist of two attrited regular army infantry companies, bypassed during the penetration of their parent brigade, and two militia platoons from a nearby village defense, likewise bypassed.

Partisans Versus Guerrillas

Using the term **partisan** to describe the actions of these differing groups lends a patriotic, unifying connotation which the term "guerrilla" does not. Although many of the tactics, techniques, and procedures used by partisan forces can be loosely termed "guerrilla fighting," OPFOR doctrine never refers to partisans as "guerrillas." By OPFOR definition, **guerrillas** or **guerrilla forces** conduct actions outside the borders of their own country.[1] When OPFOR doctrine addresses guerrillas, it either means OPFOR advisors to guerrillas fighting in another country or guerrillas from another country fighting with the borders of the State. Guerrillas fighting within the borders of the State are **insurgents**.[2] While the real distinctions may seem small, they are important to the OPFOR leadership.

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[1] The OPFOR defines **guerrilla warfare** as military and paramilitary actions conducted in enemy-held or hostile territory by irregular, predominantly indigenous forces.

[2] The OPFOR defines **insurgency** as an organized movement aimed at the overthrow of a constituted government through the use of subversion and armed conflict.

The OPFOR tactical command and control (C^2) system is an integral part of the operational-level system. Most aspects of the system reflect those at the operational level. (See *Light OPFOR Operational Art Handbook*, Chapter 3.) Tactical C^2 deals with the leadership, planning, and management of OPFOR tactical organizations--divisions, brigades, battalions, and below--in combat.

DEMANDS OF THE MODERN BATTLEFIELD

The tactical C^2 system shares many elements with the operational level. There are, however, numerous dimensions of the modern battlefield that have particular impact at the tactical level. Three of these are time, space, and coordination. These affect the survivability of the tactical C^2 system and have dictated changes in the system.

Survivability

At division level and below, the elements of the OPFOR C^2 system function closer to the enemy's weapon systems and reconnaissance assets. This increases the potential for disruption or destruction of key components of the system. Survivability of the C^2 systems is of greater concern at the tactical level. These conditions dictate the following requirements for the tactical control system:

- High mobility.
- Physical and communications security measures.
- Physical protection of command and communications vehicles.
- Redundancy.

These qualities are necessary to make the system both survivable and flexible enough to maintain constant control of units in combat.

In offensive combat, the OPFOR emphasizes continuous combat and a high rate of advance. This demands that the structure supporting the overall C^2 process be highly mobile. Tactical command posts (CPs) and associated communications must relocate frequently to maintain uninterrupted control. This has a significant impact on the size and field configuration of the CPs and the supporting communications structure. The need for dispersion and for bold maneuver, combined with time constraints, often prevents commanders from exercising the detailed, personal control over their subordinates that has been traditional in the OPFOR army.

A combined arms approach to combat is essential to success. Coordination is becoming an increasingly complex problem, while the time available is decreasing. The entire C^2 system is, therefore, increasingly vulnerable to physical and electronic attack.

Timeliness

Given the tempo of modern combat, commanders must expect the tactical situation to be subject to sudden, sharp changes, or to be shrouded in obscurity. Despite these limitations, higher headquarters still expect results. As a result, there may be inadequate time available to produce and disseminate intelligence and to formulate and issue orders and plans.

Timely accomplishment of all actions required to lead units in combat requires the commander to have constant knowledge of the situation and to react swiftly to changes. He must update decisions and missions assigned to subordinates in a timely manner. High work efficiency is necessary to prepare for battle quickly. Rapid intelligence collection, timely receipt of subordinate commanders' reports, and accurate information from the senior commander and adjacent units are all extremely important for maintaining efficiency of C^2.

The fast pace of modern combat imposes time constraints on the OPFOR decision making process and planning cycle. Despite doctrinal emphasis on continuous combat, the division staff still concentrates on the short-term tactical task at hand, leaving detailed planning of long-range operations to the staffs of regions, districts, or an expeditionary army.

Decentralized Battle Management

In the past, OPFOR commanders tended to issue detailed plans. They maintained rigid control over the execution of their plans, closely supervising subordinates and interfering in the details of execution. The practice is now to retain centralized operational control, but to avoid rigidity by allowing decentralized battle management. The conduct of battles is left to the tactical commanders fighting them. This should ensure a timely and effective response to rapidly developing and changing battlefield situations.

Initiative

To allow greater freedom of action for tactical commanders, the OPFOR is fostering initiative down to battalion and even lower. In OPFOR thinking, however, initiative has a narrower definition than in the U.S. Army. It is the freedom to plan for uncommon or unusual responses. In other words, commanders must anticipate, or at least interpret correctly, their role in the higher plan and execute it without detailed guidance from higher.

Stability

Stability consists of knowing the situation, rapidly restoring disrupted C^2 and communications, gathering situation data and making decisions in a timely manner. Stability also involves maintaining reliable communications with subordinate and coordinating units, and senior commanders, as well as reliably protecting the C^2 facility against the enemy.

Continuity

Continuity consists of the commander influencing the battle by all means at his disposal. In battle, the commander must carefully follow the course of events, continuously reconnoiter the enemy, and promptly assign or update the missions of attached and supporting units. Constant knowledge of the battlefield situation, analysis of that situation, and anticipation of important changes are necessary conditions for maintaining C^2. This permits the commander to employ organic and attached weapons skillfully and to effectively exploit enemy vulnerabilities.

Camouflage, Concealment, and Deception

On the modern battlefield, camouflage, concealment, and deception (CCD) is especially important in light of the increased role of surprise, the increased capabilities of enemy reconnaissance, and the use of high-precision weapons. Maintaining operational security is an important condition for C^2. It can involve using secure communications; ciphers and codes; tables of callsigns and signals; and camouflage and concealment of CPs.

COMMAND AND CONTROL SYSTEM

The OPFOR has designed a C^2 system that is, at least in theory, well-tailored to suit the rigorous demands of a fluid, fast-changing battlefield. Centralization of control at the operational level keeps the focus on the overall operational goal and ensures the direction of resources toward the main effort. Should the control mechanism break down, the issue of the operational commander's decision should ensure that constructive direction of the battle continues. The OPFOR insists that **tactical commanders use their initiative within the framework of their superior's overall concept**.

Organs of Control

The organs of control common at all echelons **down through brigade** include the commander, the command group, and the staff. They perform the functions required to control the activities of troops in preparing for and conducting combat. At **battalion and below**, the commander performs the same functions, but without such a large command group and staff.

The primary function of these organs is to **acquire and process information**. Evaluation and knowledge of the situational elements of combat is fundamental to the decision-making process and the direction of troops. **Decision-making and planning combat actions** are also C^2 functions of the control organs. After the control organs have acquired and processed the information, they review the situation to determine if a decision is necessary. Any decision should be both practical and timely. After making the decision, the control organs must **organize, coordinate, disseminate, and support the missions of subordinates**. Additionally, it is their responsibility to train and prepare troops for combat, and to monitor the precombat and combat situations.

All headquarters of ground forces combined arms organizations (military regions, expeditionary army, military district, divisions, and brigades) perform some of the same basic functions, but differ in size and complexity. The higher the level, the larger and more complex the staff tends to be.

In addition to the commander, a division or brigade headquarters has two basic elements: the command group and the staff. The command group includes the commander and those officers working for the commander in a direct command relationship those who cause the unit to execute his orders. The staff includes officers assisting the commander in planning and supervision. Some officers fall into both categories.

Commander

OPFOR commanders have complete authority over their subordinates. This centralized authority enables the commander to act decisively and with initiative, to reduce decision making required of subordinates, and to maintain troop discipline and unity.

The commander is responsible for the combat readiness of the unit. He is responsible for combat training, military discipline, condition of the unit's equipment, and all logistics and medical support. He is responsible for all C^2 measures during the preparation, organization, and conduct of combat.

At every level, OPFOR commanders have sole responsibility for the fulfillment of the mission. Because of the stress on the operational level of command, tactical commanders are often young, but have tactical experience and time in command. The OPFOR does not discourage initiative in junior commanders, as long as they exercise it in accordance with the senior commander's plan.

OPFOR doctrine emphasizes that under the fluid conditions of modern warfare, even in the course of carefully planned combat actions, the commander must accomplish assigned missions on his own initiative without constant guidance from above. To do this, the commander must be well aware of the general situation and the intentions of the senior commander.

Command Group (Brigade and Above)

At brigade level and above, the commander commands through a group of deputy and subordinate commanders. (See Figure 2-1.) He exercises command authority over his unit and is responsible for its actions. His deputies are responsible for some of the technical or branch-specific actions. Subordinate maneuver unit commanders are considered major subordinate commanders. The deputy commanders are the chief of staff, the deputy commander for the rear, and the chief of artillery.

The **chief of staff** is the assistant to the commander. The chief of staff is the only officer authorized to issue orders in the name of the commander. It is his responsibility to understand not only the commander's specific instructions, but his command methodology. He ensures the execution of the commander's orders during the commander's absence. The commander may move well forward with a small mobile **command observation post** (COP) during combat. In these circumstances, the main CP is under the control of the chief of staff.
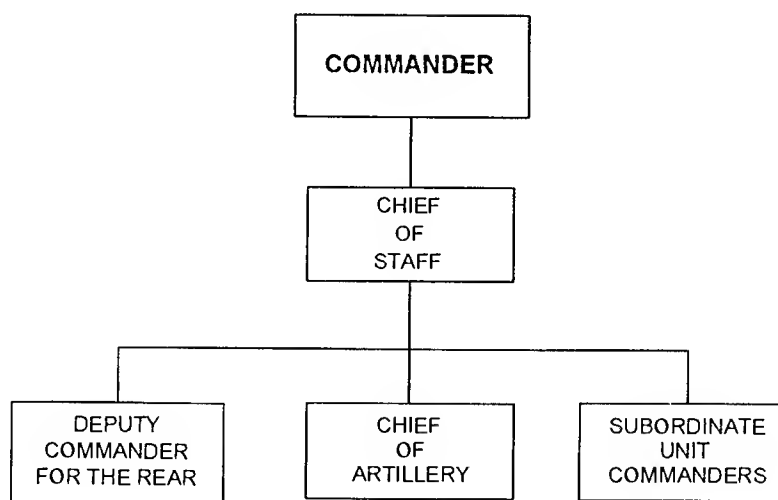

Figure 2-1. Command group (brigade and above).

The **deputy commander for the rear** is responsible for the combat service support of the unit.[1] This combat service support includes supply, transportation, maintenance, and medical support. The deputy commander for the rear controls the rear CP, and develops plans and orders, with the support of a rear staff. Depending on the mission, he may also be responsible for coordinating additional support assets allocated from the General Staff, as well as coordinating reserve activation and militia utilization. He is in essence the "installation commander" for the rear area. He is responsible for rear area organization and security and assigns locations in the rear area. Additionally, he establishes policies and plans concerning security and damage control. He is responsible for direct support maintenance for both armored and wheeled vehicles, procurement of repair parts, and vehicle replacement. He also oversees maintenance training. During combat, he directs the repair and evacuation of disabled equipment, and informs the commander on the status of the equipment.

The **chief of artillery** coordinates and plans the artillery fires of the organic and attached units. The commander issues orders concerning artillery support to the chief of artillery. During the course of the battle, however, he serves primarily as a special staff officer, advising the commander on artillery matters.

Subordinate unit commanders are responsible for the combat readiness of their units, as well as combat training. They are the instruments through which the region or district commanders fight the battle.

Staff (Brigade and Above)

At brigade level and above, the staff assists the commander by planning, monitoring, and controlling combat actions. However, it is not directly subordinate to the commander. Supervised by the chief of staff, it consists of coordinating staff, special staff, and branch chiefs. (See Figure 2-2.)

The principal functions of the staff are: plans and training; artillery; intelligence (reconnaissance); aviation; air defense; engineer support; chemical defense; and communications (signal). There are staff elements representing each of these functions. Each is responsible for the technical aspects of its functional area. The senior officer of each arm is also an advisor with direct access to the commander.

The **chief of staff** controls the staff and coordinates its work. He is the primary conduit for information between the commander and his unit. He reports staff findings and acts as the organizer for execution of the command decision. He is responsible for coordination of all staff-work, and is personally responsible for the coordination of logistics requirements between the branch chiefs and the deputy commander for the rear.

Coordinating staff. Four sections make up the coordinating staff. Each section is under the direct control of the chief of staff. The four sections are: **plans and training**; **intelligence**; **personnel**; and **communications**.

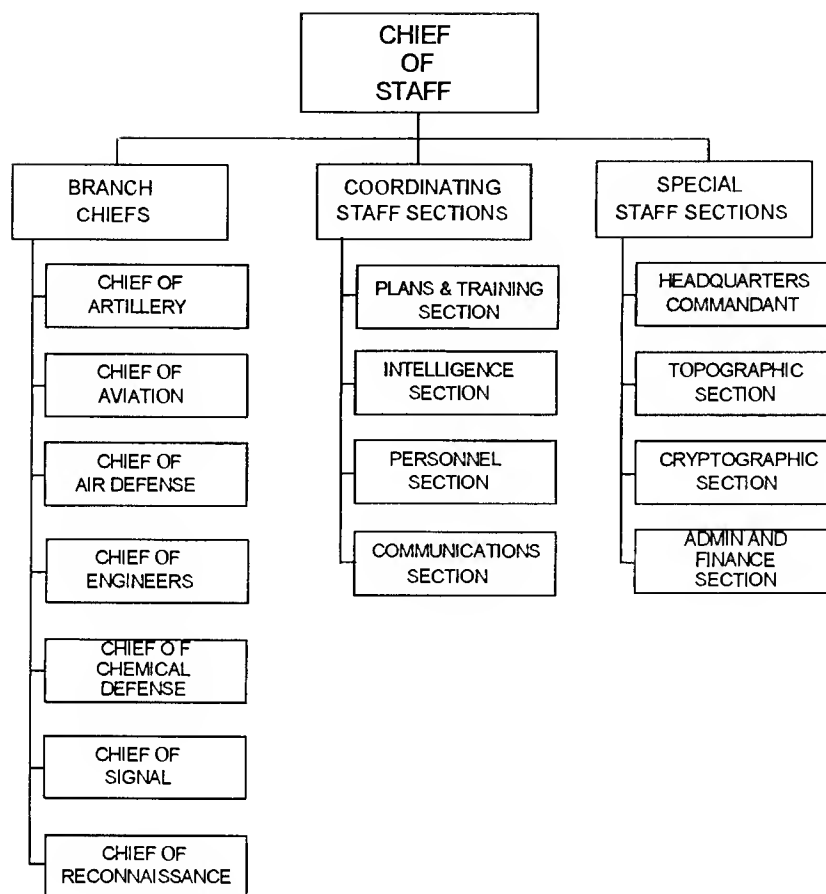[1] At district level, he is normally the district deputy commander.

Figure 2-2. Staff (brigade and above).

The most important coordinating staff section is the **plans and training section**. The chief of plans and training has responsibility for training and formulating battle plans and orders. He monitors the work of all other staff sections, keeps abreast of the situation, and is ready to present information and recommendations concerning the ongoing operational or tactical situation. In coordination with the intelligence section, the chief of the plans and training section keeps the commander informed on the progress of combat actions. His specific duties include--

- Collecting information concerning the tactical situation of friendly forces to include his unit, adjacent units, and higher units.
- Preparing and disseminating orders, battle plans and reports.
- Providing liaison for the exchange of information within the unit headquarters and with higher, subordinate, and adjacent units.
- Organizing the main CP.
- Organizing troop movement and traffic control.
- Coordinating the organization of reconnaissance with the intelligence section.
- Coordinating combat support.

The chief of reconnaissance heads the **intelligence section**. He is part of an intelligence chain that originates at the national level. His reconnaissance efforts fit into an overall intelligence and reconnaissance plan.

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The chief of reconnaissance is subordinate to the chief of staff, but can report directly to the commander. In coordination with the plans and training section, the intelligence section makes collection plans, and collects and evaluates information concerning the enemy, weather, and terrain. The section disseminates evaluated timely information. During combat, the chief of reconnaissance directs the efforts of subordinate intelligence sections and reconnaissance units. His specific responsibilities include--

- Collecting and analyzing information on the enemy, terrain, and weather.
- Disseminating of analyzed information to the commander and adjacent units.
- Developing requirements-based collection plans.
- Organizing reconnaissance missions, to include requests for aerial reconnaissance.
- Preparing the intelligence portion of combat orders.
- Preparing periodic intelligence reports and briefings.
- Exploiting documents and materiel.
- Interrogating prisoners of war.

The chief of signal troops heads the **communications section**. He organizes communications with subordinate, adjacent, and higher headquarters. The communications section must ensure that the commander has continuous and uninterrupted communications by planning wire, radio, and mobile communications. The term "mobile communications" includes all means of communications other than radio and wire. Specific responsibilities of the communications section include--

- Organizing the communications network, to include integrating all primary methods used by the headquarters (for example, linking military communications with the national phone system).

- Establishing callsigns and radio procedures.
- Organizing courier services.
- Supervising the supply, issue, and maintenance of signal equipment.

The chief of personnel heads the **personnel section**. He assigns personnel; requests replacements, records losses, administers awards and decorations; and collects, records, and disposes of war booty. This is the one staff officer who may not physically locate with the rest of the staff. Although he reports directly to the chief of staff, he often locates with the deputy commander for the rear.

Coordinating staff responsibility for logistics rests with the chief of staff. He cannot devote a large portion of his time to detailed logistic coordination and still fulfill his other duties. This increases the burden on the branch chiefs and the deputy commander for the rear. Each chief is responsible for consolidating and forwarding logistic requests for his branch to the deputy commander for the rear.

Special staff. The special staff includes the following four special staff sections, listed in order of probability:

- The **headquarters commandant** is responsible for ensuring the proper location, organization, support, and protection of headquarters and CPs.
- The **topographic section** gathers and analyzes terrain data and maintains supplies of maps, catalogs, and map-related equipment.
- The **cryptographic section** encodes and decodes the unit's cryptographic communications, designates the codes for communicating with subordinate units, and supervises communications security procedures and cryptographic training. This section's activities are

part of a larger effort, coordinated by the chief of the intelligence section.

- The **administration and finance section** organizes the administration and records necessary for providing quarters, food, supplies, and pay for personnel. Administration and finance sections are rare at either division or brigade level.

Branch chiefs. The branch chiefs serve as special staff officers. They also advise the commander on matters pertaining to their specific fields.

- The **chief of artillery** serves as unit fire support coordinator. As the chief artillery advisor in combat, he usually locates with the unit commander.
- The **chief of aviation** advises the commander on the capabilities and uses of air assets, manages requests for all types air support. He maintains communications with air assets operating in the battle area. Size of his support element depends upon the mission.
- The **chief of air defense** acts as a special staff officer for air defense employment.
- The **chief of engineers** advises the commander on engineer support for all missions. He assigns tasks to engineer units based on the commander's concept of the battle.
- The **chief of chemical defense** is responsible for the unit's protection from NBC weapons. He is responsible for the supply and maintenance of NBC gear and equipment, for organization of NBC reconnaissance, and for all NBC training and work performed by unit personnel.
- The **chief of signal** is also the chief of the communications section.
- The **chief of reconnaissance** is also the chief of the intelligence section.

Each branch chief is responsible to the commander but receives additional instructions and guidance from his branch counterparts at the next higher level.

A good example of dual allegiance to the unit commander and a branch chief at the next higher level is in the area of artillery support. From the division commander's point of view, all artillery assets organic to his subordinate brigades or allocated to the division by the region, army, or district are under his control. The division commander directs the chief of artillery at division level to plan and direct the division's artillery fires to support the concept of the battle. The brigades' artillery assets are part of the general artillery effort. Centralized fire planning at division level ensures proper allocation of resources. It also ensures that weapons engage appropriate targets. Each brigade's chief of artillery is responsible for integrating his fire plan with the fire plan from the next higher echelon. Within the constraints posed by the division's fire plan, the chief of artillery must satisfy the requirements of his commander or resolve any conflicts through coordination. While the possibility for conflict and confusion exists, the OPFOR does not view this as an infringement on command prerogative. It sees the fire plan as an aid to planning, not a constraint. The brigade commander, for example, learns from the division fire plan which targets the division's artillery must attack. He can then decide which targets to attack with brigade artillery.

If the system works, it reduces the administrative and technical burden on the each commander, and he can concern himself with the conduct of his maneuver units. The commander at the highest level has centralized control over the assets available to him. This centralized control requires a need for coordination. This becomes more evident in battles with a wide dispersal of forces.

Unit/Type	COP	Main	Alternate	Rear
Region/Army	(X)	X	(X)	X
District/Division	(X)	X	(X)	X
Brigade	(X)	X		X
Battalion	X			
Company	X			
Platoon	X			

Figure 2-3. Command posts.

In addition to the branch chiefs, the deputy commander for the rear may function as a special staff officer. He advises the commander and chief of staff on supply and rear service matters. He is also responsible for part of the coordinating staff responsibility for logistics.

Command Posts

OPFOR tactical commanders exercise control through a series of command posts (CPs). Level of command determines the number and type of CPs. (See Figure 2-3.) There are four basic types of CPs: **main, alternate,** and **rear CPs,** and **(COPS)**.

The commander decides where the posts locate and how they move. During lengthy moves, CPs may leapfrog forward along parallel routes. They follow reconnaissance patrols (including chemical and engineer reconnaissance elements) that select the new locations and act as traffic regulators. While on the move, CPs maintain continuous contact with subordinate units, higher headquarters, and flanking units. Normally, the alternate and main CPs move by leapfrogging each other, one moving while the other is controlling the battle.

During movement halts, it is normal to disperse CPs in concealed areas and camouflage them if necessary. Radio stations and special vehicles locate some distance from the actual command center.

All headquarters have an administrative element that provides local security and traffic control. Air defense of these headquarters receives a high priority. Engineer support is usually available to dig in and help camouflage key elements. Due to dispersion in a mobile environment, CPs are often responsible for their own local ground defenses.

Main Command Post

A **main CP** is the primary CP at brigade, division, and higher. Brigades, divisions, and expeditionary armies always establish this CP as a mobile field headquarters. For most divisions (and an expeditionary army), this is essential due to their offensive missions. If the commander moves forward in a COP during the offensive, the chief of staff assumes control of the main CP.

Alternate Command Post

Divisions (and above) may establish an **alternate CP,** with reduced staffing, to ensure continuity of control. This may be necessary during movement of the main CP or should the main CP be put out of action. In offensive actions at division (and above), the use of a COP may obviate the need for it. A division might form an alternate CP when dispersed over a wide area where lateral communication is difficult, or in a static, defensive situation.

Rear Command Post

From a **rear CP**, the deputy commander for the rear (chief of the rear) organizes and directs logistics and rear service support. Brigades, divisions, and expeditionary armies always establish this CP as a mobile field headquarters. The brigade rear CP is capable of taking temporary control of a brigade if its main CP is destroyed. The division rear CP interacts closely with brigades to ensure sustained combat capabilities.

Command Observation Post

In addition to the main CP, the commander at brigade and division level (and higher) may establish a **command observation post.**[2] Accompanied by key staff officers, he moves forward to a position where he can best observe and influence the battle. In the offense, a division- or brigade-level COP normally moves 2 to 5 km behind the forward edge of friendly troops, with a first-echelon unit on the main axis. Depending on the number of advisors accompanying the commander, this COP may include one or more armored command vehicles, armored personnel carriers (APC), or tanks.

At battalion level and below, the COP is the only CP formed. Normally, it has an armored command vehicle, an APC, or tank. It could also move in a light truck or dismounted. The commanders of reinforcing units, especially artillery, colocate with the COP of the maneuver battalion or company they are supporting.

DIVISION AND BRIGADE C² PROCESS

Like commanders from every army, OPFOR division and brigade commanders must gather information on which to base decisions, convey decisions as orders, and supervise the execution of these orders. The commander relies on his staff to assist him in accomplishing these tasks. As a result, the OPFOR has formalized staff procedures. The staff can perform these procedures in their entirety only when time is not a factor. Once fast-moving combat has begun, all procedures may take an abbreviated form.

The OPFOR emphasizes the need to be capable of adjusting rapidly to changes in the tactical situation. **The dynamics of the modern battlefield take precedence over rigid adherence to formal procedures.** Unlike an operational-level commander, who concentrates on long-range planning, a division commander focuses on day-to-day combat activities. Planned speeds of division combat action require quick development of the battle based on the division commander's initiative. Therefore, he must remain aware of the situation and intentions of the senior commander.

Everything in the OPFOR C² system stems from the commander's decision. The decision-making process begins when the **commander receives a combat order or preliminary order** from his senior commander. There is only limited time for staff planning and command decision making between receipt of orders from the army commander and the start of division combat actions. The commander's estimate and decision may take only a few minutes, and he may have to base it on limited information. The order may be nothing more than a sentence transmitted by radio or messenger to a subordinate unit commander.

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[2] Sometimes called a "forward command post" at this level.

The following paragraphs outline the steps in the C^2 process at **division** level. The process for an **infantry or tank brigade** is basically the same as for the division. As at division level, the brigade commander receives his mission from the senior commander (district, army, or division) to whom he is subordinate. His own decision flows from that higher commander's concept. The main difference is that the brigade commander has only battalions, rather than brigades, to carry out his mission.

Offense

In preparing for offensive battle, the division commander follows procedures similar to U.S. commanders. **However, readers should note that there are significant differences, compared with U.S. procedures, in the sequence of thought and the weight given to individual factors.** Assisted by his staff, the OPFOR commander--

- Clarifies the mission received from a higher commander.
- Issues a preliminary order to his subordinates.
- Makes an estimate of the situation.
- Considers courses of action researched and presented by the staff.
- Makes a command decision, subject to approval of the next-higher commander.
- Conducts a commander's reconnaissance to refine the decision.
- Issues a combat order to announce the final decision.[3]
- Issues combat instructions to change or supplement the combat order.

- Monitors execution of combat orders and instructions.

The following paragraphs describe each step in more detail.

Clarification of Mission

The decision of the tactical commander at any level hinges on the operational or tactical guidance he receives from his direct superior. The commander must understand the senior commander's concept of battle and his own division's role in it. Then he initiates the decision-making process according to that guidance, proceeding informally through an estimate (evaluation) of the situation. At this point, he also makes a time assessment and allocates time for the various steps in the C^2 process. Through his chief of staff, he sets in motion any measures that require immediate attention; this includes issuing preliminary orders to subordinates.

Preliminary Order

The OPFOR attempts to maximize the time available for combat preparations by issuing **preliminary orders** to alert subordinate units of an upcoming battle. [4] In the division, for example, the commander receives his mission from the expeditionary army commander. He could receive this order by telephone, radio, messenger, or at a formal briefing. The division commander studies the mission, the concept of the operation, and scheduled support by army units. He analyzes the role of his division in the overall operation of the army. From this analysis, he extracts information that permits his staff and subordinate brigade commanders to begin preparation for combat, and issues this information as a preliminary order.

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[3] He normally does this orally. Given time before the mission, the staff may then print the decision in an approved, detailed format and disseminate it.

[4] The OPFOR preliminary order is roughly equivalent to a U.S. warning order.

Estimate of Situation

The commander and staff conduct the estimate in the sequence:

- Enemy forces.
- Own forces.
- Adjacent forces.
- Terrain.
- NBC situation.
- Weather and time of day.

They consider each of these factors as it impacts on the mission set by the higher commander.

The chief of staff organizes the staff to present information to the commander concerning the enemy, terrain, troops available, and weather. If time permits, the division commander makes a personal reconnaissance with staff members and subordinate commanders to better evaluate the situation. Given sufficient time, the staff prepares and coordinates written estimates for the commander. Otherwise, the staff provides oral input, from which the commander makes his estimate of the situation. The result of this estimation process should be a concept for the combat action of the division, which forms the essence of the commander's decision. The commander may have several variants of possible courses of action from which he must choose.

Evaluation of Decision Variants

The commander must consider the variants of enemy action in relation to his own, preparing responses during the estimation process. On the basis of the commander's guidance and estimate of the situation, the staff and subordinate commanders provide input to the plans and training section. Given limited time, the commander may require only specific information from the staff. The plans and training section prepares several possible courses of action for the commander's consideration, and the chief of staff indicates his preference. Based on the available data and the recommendations from the staff, the commander makes a decision. The decision may be one of the recommended courses of action, a combination of two or more recommendations, or a new solution.

Commander's Concept (Decision)

The decision-making process is complete when the commander has selected the optimal variant and formulated his decision in enough detail to report it to his higher commander. Simultaneously, the commander provides it to his staff for further planning and for dissemination of the finalized missions to the troops. The decision includes the concept, organization for combat, axes of advance, missions for major subordinates, and measures for support and troop control. Figure 2-4 illustrates the content of the commander's decision.

Concept of battle. The commander specifies which enemy groupings his subordinates are to destroy, with what resources, and in what order. He identifies the axes for main and supporting attacks, as well as defensive sectors. He outlines the organization for combat (combat formation) and the general scheme of maneuver.

Tactical missions. The commander assigns tactical missions to organic and reinforcing units. This part of the decision defines the roles of maneuver and combat support units within the combat formation.

Coordination. The commander indicates missions (objectives), phase lines, targets, and timings that are necessary to execute the battle concept.

Organization of support and C². The commander often leaves these questions to the chief of staff. Given limited time, the commander confines himself to defining the most important objectives, leaving everything else to the staff, which produces plans for the commander's approval.
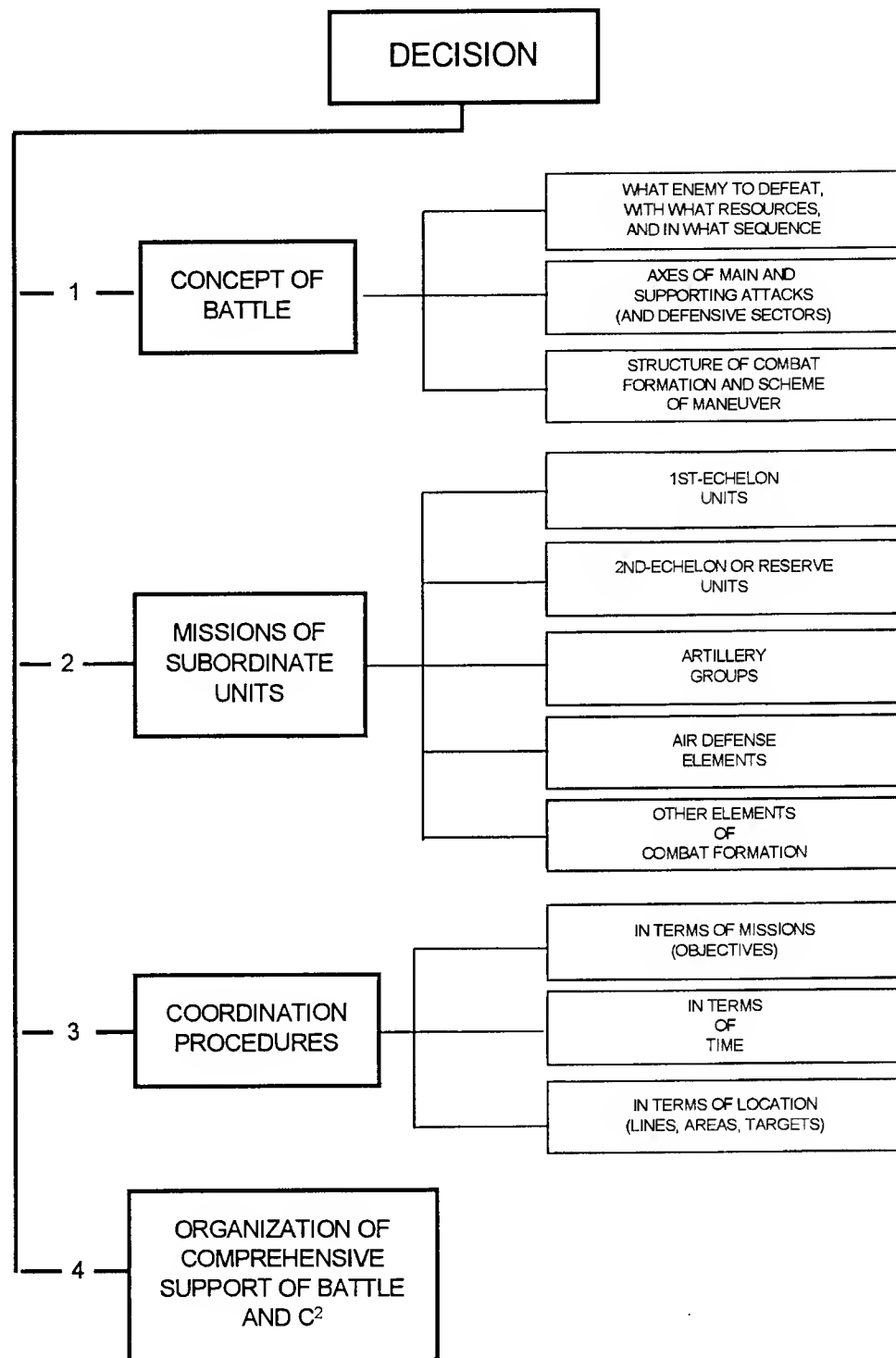
Figure 2-4. Content of commander's decision.

The commander must first report the decision to his senior commander for approval. Once this has occurred, he passes the decision to subordinates, and the chief of staff translates it into detailed plans and instructions.

Commander's Reconnaissance

Up to this point, the commander has been working primarily from his map. If time permits, he now refines the decision on the ground. The commander may attend the senior commander's ground reconnaissance and conduct his own reconnaissance with his subordinate commanders. In the OPFOR view, to conduct ground reconnaissance before making a decision would be wasting valuable time that the staff needs to implement the plan. The commander may modify his decision as a result of the ground reconnaissance and give verbal orders for this modification.

Combat Order

The commander announces his decision in the presence of the chief of staff and the chief of the plans and training section. He includes key personnel such as the coordinating staff, the branch chiefs, and the deputy and subordinate commanders. This announcement of the final decision constitutes a combat order.

Time constraints necessitate heavy dependence on verbal dissemination of missions and planning guidance. It is normal for division (and brigade) commanders to disseminate the contents of the final combat order orally to subordinate units. Later, the commander may have his plans and training section issue a formal, written order to supplement the verbal instructions he has already issued. Combat orders of divisions and brigades follow a generally standard **eight-paragraph format**, regardless of the means of their transmission. (See Figure 2-5.)

When time permits, the staff adds annexes to combat orders. If annexes are incomplete when the commander transmits the order, the staff sends them out separately to prevent delay in transmission of the order. Types of annexes include coordination requirements, intelligence, security, signal, artillery, engineer, movement order, and counterattack plans.

The deputy commander for the rear and his staff write a separate order for logistics, subject to approval by the division commander. This order organizes the rear area, the location of the rear CP, routes of movement for rear elements, supply routes, supply points, sequence and time of resupply, and rear area security. It also designates general deployment areas to units located in the rear area.

Combat Instructions

Tactical commanders at all levels issue combat instructions during combat and the preparation for combat. Their purpose is to direct units to perform a specific task, or to adjust a mission previously assigned. They change, supplement, or elaborate on initial combat orders as the tactical situation changes. Combat instructions are usually in a **four-paragraph format** and as brief as possible. The four-paragraph structure includes--

- An estimate of the enemy situation.
- The new or revised mission.
- The support available from the commander for this mission.
- A time by which the receiving unit must be ready to execute the task.

Because combat instructions are time-sensitive, their dissemination is normally verbal, by messenger or over the radio.

TRADITIONAL FORMAT	MODIFIED FORMAT
1. Enemy Situation: a concise statement of the enemy forces and their disposition, as that information relates to the mission of the issuing unit.	**1. Enemy Situation:** a concise statement of the enemy forces and their disposition, as that information relates to the mission of the issuing unit.
2. Mission: a statement of the mission assigned to the issuing unit by its superior headquarters.	**2. Mission:** a statement of the mission assigned to the issuing unit by its superior headquarters.
3. Missions of Higher and Adjacent Units: a description of the missions of higher and adjacent units, and their impacts on the mission of the issuing unit; includes coordination procedures for nonorganic/attached units.	**3. Missions of Higher and Adjacent Units:** a description of the missions of higher and adjacent units, and their impacts on the mission of the issuing unit; includes coordination procedures for nonorganic/attached units.
4. Concept of Battle: a discussion of the commander's decision for fulfilling the mission of paragraph 2; includes the concept of maneuver and fire support.	**4. Concept of Battle:** a discussion of the commander's decision for fulfilling the mission of paragraph 2; includes the concept of maneuver and fire support.
5. "I Order...": establishes the combat missions of subordinate elements, normally in order of: first echelon, second echelon, artillery, air defense, and reserves.	**5. "I Order...":** establishes the combat missions of subordinate elements, normally in order of: first echelon, second echelon, artillery, air defense, and reserves.
6. Preparation Times: establishes the times by which individual subordinate units must be ready for combat.	**6. Expenditure Norms:** provides the consumption norms for ammunition and fuel during the battle.
7. Control Coordination: provides special instructions for coordination of combat actions by subordinate units.	**7. Preparation Times:** establishes the times by which individual subordinate units must be ready for combat.
8. Command Continuity: designates which of the subordinate officers is to assume control if the commander becomes incapacitated.	**8. Command and Control:** contains all C^2-related information.

Figure 2-5. Format for division (or brigade) combat order.

Monitoring Execution

Issuing orders does not ensure that subordinates will understand them and carry them out. Therefore, the OPFOR places great emphasis on supervision after issuing the order. The chief of staff is responsible to the commander for the overall organization of staff supervision. Each staff section is responsible for checking on the execution of the orders it prepares and also ensuring that subordinates have correctly understood the orders. The chief of staff may issue additional orders, with the division commander's approval, to resolve any misunderstandings.

Proper supervisory control takes many forms. These include observation from air and ground observation points, and instructions and questions passed by radio or messenger. The best method is personal contact. The division commander may personally supervise the most important sector of a combat action. At the appointed time, he reports his units' readiness to the senior commander.

In fast-moving situations, control is somewhat looser. Subordinate commanders then react as the situation dictates, realizing they are responsible for acting in accordance with the commander's concept.

Defense

In the defense, the division (brigade) commander's decision involves essentially the same process as in the offense. The main elements of this process are as follows:

Clarification of Mission

In organizing the defensive battle, the commander first analyzes the mission. He must understand the concept of his higher commander to determine his mission, timetable, and support from higher headquarters. The commander, or his chief of staff, then determines the time available for planning. The commander issues the necessary instructions to his staff and subordinate commanders and continues with his estimate of the situation.

Estimate of Situation

Once the commander has analyzed the mission, he conducts his estimate of the situation. In the defense, much of this estimate takes place using the map. If time permits, the commander conducts personal reconnaissance to help him reach a decision. First, he examines the enemy situation, since the enemy and his weapons systems influence the mix of weapons the OPFOR must use and the preparation needed. Whether or not the enemy is in contact determines the form the defense takes. Next, the commander examines his forces available, including attached and supporting troops, and the mission and disposition of adjacent friendly units.

The OPFOR commander then examines the terrain and vegetation. He determines the effect of terrain on preparation of the defense and the movement of the enemy. He looks at the possibilities of enhancing natural obstacles to lend stability to the defense. Finally, the commander examines other factors such as the possible use of chemical and high-precision weapons or smoke.

Commander's Concept (Decision)

On the basis of the mission analysis, the time available, and the estimate of the situation, the commander determines his concept of the defensive battle. The result of this will be the commander's battle plan for the defense. The following paragraphs discuss factors included in his concept.

Combat formation. The commander decides how to organize the organic, attached, and supporting forces. He determines how he will situate them throughout the depth of the defense and how he will employ them.

Critical terrain. The commander selects the terrain upon which the stability of the defense depends. When possible, he uses manmade obstacles to enhance the terrain. Desirable terrain can canalize and impede and even stop the enemy's movement. It also provides friendly troops with the advantage of fire and maneuver.

Destruction of enemy. The commander determines how best to engage the enemy. He plans long- and short-range fires and kill zones. He plans to defeat the enemy as far forward as possible, continuing through the depths of the defense.

Direction of counterattack. The commander plans how best to employ his counterattack forces. He chooses initial positions for them, as well as counterattack routes and deployment lines for the destruction of enemy forces caught in kill zones.

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Priorities of engineer work. Given sufficient time, the priority of engineer support goes first to the forward defenses within the main defensive belt/line and then to the security zone, if there is one. From there, support goes backward through the defensive belt/line. Within the security zone, the priority of work goes first to the initial positions far forward, then back to the forward positions located nearest the main defenses.

Combat Order

The commander issues a combat order containing information about the enemy, the mission, the concept of the battle, the location of the forward edge, and the positions his subordinates must occupy. Further detail (in the division commander's combat order, for example) specifies combat missions for--

- **First-echelon brigades:** reinforcements, missions, defense sectors, and axes and areas for concentrating main efforts.
- **Second-echelon brigade(s):** reinforcements, missions, and either defense sectors or axes and deployment lines for counterattacks.
- The time by which units must occupy their positions.
- Coordination requirements.

BATTALION AND BELOW C² PROCESS

In combat, OPFOR maneuver battalions often have to fulfill several different missions in the course of a day's combat. For example, a battalion conducting a meeting battle might switch to a temporary defense to support the success of an adjacent attack, and then disengage from the enemy to prepare for further offensive action.

Since battalion-level combat is dynamic and frequently changing, there is no requirement for a written order. However, battalion (and company) commanders follow the same basis decision-making process as higher-level commanders. The following paragraphs outline this process for a battalion (company) conducting an attack against a defending enemy, a meeting battle, or defense.

Attack Against Defending Enemy

Preparation for an attack against a defending enemy begins when the battalion (company) receives a combat mission. The process of organizing for battle involves--

- Decision making by the battalion (company) commander for the attack.
- Commander's reconnaissance.
- Assignment of combat missions to subordinate units.
- Organization of coordination, fire destruction of the enemy, comprehensive support, and C².

The commander's procedures for doing this depend on the situation, the method of launching the attack, the combat mission, and the time available.

When launching an attack from a position in direct contact with the enemy, the commander must also make decisions regarding regrouping and the relief of defending units. When regrouping from a defensive posture, organization for the attack occurs while the battalion (company) is in the battalion defensive area (company strongpoint) under enemy fire. The situation is different when launching an attack with simultaneous relief of defending units or from the march. Then, the commander can organize battle while in the assembly area, out of contact with the enemy.

When attacking from the march, there is often no opportunity to conduct ground reconnaissance on the terrain with subordinate commanders/leaders. In this case, organization for battle occurs in the assembly area, using a map or terrain model. During subordinate units' movement to the line of departure and the beginning of the assault, the commander updates the mission and coordination procedures for them. For subordinate units exploiting a penetration, the commander may assign missions during their movement toward the enemy defense. He may then update missions and coordination procedures when they are ready to deploy into prebattle or battle formation.

Clarification of Mission

The battalion (company) commander must understand the role of his unit in the senior commander's concept of battle. Generally, the mission of first-echelon battalions (companies) is to achieve the immediate mission of the parent brigade (battalion). A second-echelon battalion (company) would complete the destruction of the enemy. After analyzing the mission, the battalion (company) commander--

- Determines measures for the fastest preparation of subordinate units to perform the combat mission.
- Performs a time calculation.
- Issues instructions to company (platoon) commanders on preparing to perform the combat mission and on the time and procedure of work on the terrain.
- Estimates the situation.

Time Calculation

The commander must carefully plan the use of the time between receipt of the mission and the time for readiness to attack. He must allocate time for the following actions:

- Analyzing the mission and determining measures that require immediate attention.
- Issuing instructions to subordinate commanders on preparing to perform the combat mission and on the time and procedure of work on the terrain.
- Preparing subordinate units to perform the combat mission.
- Estimating the situation.
- Making the decision.
- Briefing the decision to the next higher commander (brigade for battalion; battalion for company).
- Conducting ground reconnaissance with the commanders of companies (platoons) and attached units and organizing regrouping, coordination, and fire engagement.
- Issuing instructions on coordination, comprehensive support of the attack, and C^2.
- Work of company commanders (platoon leaders) with platoon (squad) leaders for organizing battle on the terrain.
- Return of commanders/leaders and practical work with their own units.
- Conducting regrouping with simultaneous relief of defending units.
- Report of subordinate company commanders (platoon leaders) on readiness for attack.
- Report to brigade (battalion) commander on battalion (company) readiness to attack.

Estimate of Situation

In estimating the situation, the battalion (company) commander clarifies the following:

- Enemy force composition, situation, status, capabilities, and degree of protection; probable locations of defensive positions, obstacles, and firing positions; and the strong and weak points in the nature of his defense.
- Composition of the commander's own force (organic and reinforcing units), their situation, status, capabilities, degree of protection, and state of supply.
- Composition of adjacent units, their situation, and the nature of missions they are performing.
- Nature of terrain, on approaches and in the depth of the enemy defense, and its effect on battalion (company) combat actions.
- The NBC situation.

The estimate of the situation also takes into account the weather, time of year and day, and their effect on preparing and conducting the attack. As a result, the commander draws conclusions, on which he subsequently bases his decision.

Commander's Concept (Decision)

After the situation estimate and necessary tactical calculations, the battalion (company) commander makes the decision. The basis for the decision is the commander's concept. In the latter, the battalion (company) commander specifies--

- The direction for concentrating main efforts.
- Methods of routing the enemy (which enemy, where, in what sequence, and how), with procedures for engaging him by fires of organic and attached weapons, measures for deception, and actions by subordinate units.
- Battalion (company) combat formation.

Commander's Reconnaissance

After reporting the decision to the senior commander, the battalion (company) commander performs ground reconnaissance. The purpose of this reconnaissance is to study the terrain and the enemy and to update the decision made from a map. The battalion (company) commander and his subordinate commanders move forward under cover of forward defending units or of specially assigned units. If possible, the battalion commander has commanders of his first-echelon companies bring along their platoon leaders.

When the commander's reconnaissance arrives in the vicinity of the unit defending in the direction of the battalion (company) attack, it establishes communications with that unit's commander. The latter usually assists them in studying the enemy. Then the battalion (company) commander--

- Performs orientation.
- Designates reference points.
- Updates the trace of the enemy forward edge, the disposition of enemy strongpoints and weapons, and targets for the senior commander's weapons.
- Determines enemy weapons, observation posts, and other targets for his own unit's weapons to engage direct fire.
- Updates possible axes of enemy helicopters and their lines of attack.
- Studies approaches to the enemy forward edge and the presence of natural obstacles and barriers.
- Outlines passages in obstacles, the time of preparation, and procedures for marking the passages.
- Updates and determines the attack frontage, direction for concentrating main efforts, and combat missions for subordinate units.

- Determines enemy objectives (targets) subject to fire engagement, and firing positions for weapons and the time periods for their preparation by engineers.
- Designates and updates forward movement routes, points (lines) of deployment and departure, and safety lines.
- Determines sites and directions of displacement of COP and rear services.

In an attack from a position in direct contact, the battalion (company) commander additionally updates the assembly area (attack positions) of the battalion (company) and companies (platoons). In an attack from the march, the commander's reconnaissance moves along the route to study its features. Based on this, he determines the start point (line), and deployment points (lines); updates bypass routes and crossing (fording) sites; and updates lines of departure for companies (platoons). In a dismounted assault, the commander specifies the company (platoon) dismount line.

Combat Order

Time constraints necessitate heavy dependence on verbal transmission of missions and planning guidance. In the combat order for an attack against a defending enemy, the battalion (company) commander indicates the following:
- **First paragraph:** brief conclusions from estimate of enemy situation.
- **Second paragraph:** missions the senior commander has assigned to the battalion (company) issuing the order, and missions of adjacent units.
- **Third paragraph:** battalion (company) combat mission and the commander's concept. The concept begins with the words "**I decided....**"

- **Fourth paragraph:** the words "**I order...**" followed by combat missions for--
  ◊ **First-echelon companies (platoons).** Means of reinforcement. Attack axis objective, and adjacent unit(s) attacking same objective. Direction for continuing the attack.
  ◊ **Second-echelon company (platoon).** Same as for first-echelon companies (platoons).
  ◊ **Reserve.** Location, missions to be ready to execute.
  ◊ **Mortar and attached artillery units.** Procedures for fire support of attacking units. Primary and alternate firing positions.
  ◊ **Antitank unit.** Place in combat formation and direction of possible actions, deployment lines, procedures for occupying them, and missions to be ready to execute. Signals for commencing and ceasing fire. Procedures for actions after performing the mission.
  ◊ **Air defense unit.** Missions, firing positions, sectors for reconnaissance of air enemy and conduct of fire. Procedure for conducting fire.
- **Fifth paragraph:** Expenditure of missiles, ammunition, and fuel for conducting the attack.
- **Sixth paragraph:** Time for readiness to perform the combat mission. Sequence and time for camouflage, concealment, and deception (CCD) measures.
- **Seventh paragraph:** Location of COP at start of attack, and direction of displacement during battle. Designation of one subordinate company commander (platoon leader) as deputy to assume command if the commander becomes incapacitated.

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Combat Instructions

After issuing the combat order, the battalion (company) commander issues coordination instructions. These instructions organize coordination among his subordinates and with supporting and adjacent units according to missions, lines, time, and methods of performing missions. They cover the full depth of the battalion (company) combat mission. After organizing coordination, the commander issues instructions for comprehensive support of battle and for C^2.

Meeting Battle

Time constraints result in some modifications of the above process in the battalion (company) commander's organization of a meeting battle. Depending on the circumstances, the process may begin with the estimate of the situation, rather than with clarification of the mission. After that, the process includes many of the same steps as in an attack against a defending enemy. These include: making the decision; assignment of combat missions to subordinates; ground reconnaissance; and organization of fire engagement of the enemy, coordination, comprehensive support to battle, and C^2. However, there may be little opportunity for the commander to conduct ground reconnaissance. He often has to do all this based on a map, while his unit is on the move. Later, as the unit moves up to the line of departure, he can update the decision, orders, and instructions. For units acting in a march security role, he performs this update upon discovering the enemy. If time permits, the commander must report the situation and his decision to the senior commander before assigning combat missions to his subordinates.

Clarification of Mission

The commander of a battalion (company) that is part of the main body generally begins organizing for a meeting battle based on the combat mission received. However, the commander of a battalion serving as a forward detachment (FD) or advance guard may or may not have received a combat mission when march security encounters the enemy. The same is true for the commander of a company serving as a forward security element (FSE).

Estimate of Situation

The commander of a battalion serving as an FD or advance guard (or a company serving as an FSE) may have to begin his organization for a meeting battle when march security encounters the enemy. Since he may not have received a combat mission at that point, he would start with the estimate of the situation.

Because of incomplete information in preparation for a meeting battle, the commander often has to make his estimate of the enemy based chiefly on the latter's organizational structure and tactical doctrine. Besides the enemy's composition, status, position, and degree of protection, the estimate should include--

- The enemy's possible march routes.
- The possible nature of his combat actions.
- The most important targets for engagement by artillery fire.

The part of the enemy grouping whose destruction can disrupt the attack or break up the enemy combat formation and create conditions for his defeat in detail.

The estimate of friendly troops pays particular attention to capabilities for inflicting fire damage on the enemy by organic and attached artillery and for preempting him in deploying the main body into battle formation. In estimating the terrain, the focus is on the most advantageous routes of maneuver to the enemy flanks and rear, lines for deployment and departure, and the direction for attack by friendly units.

Commander's Concept (Decision)

The commander's concept includes the following:
- The axis for concentrating main efforts and form of maneuver.
- Methods for defeating an enemy who is moving forward (attacking), including measures for deception.
- The combat formation.

The rapidly changing situation demands that the battalion (company) commander use creativeness and initiative.

Combat Order

The nature of the meeting battle dictates that the battalion (company) commander must often assign missions to units long before issuing the combat order. He may do so after the estimate of the situation or after determining the concept. This may be necessary, for example, in order for artillery to deliver preemptive fires to immobilize the enemy and support the forward movement of the OPFOR main body.

After making the decision, the battalion (company) commander assigns missions to subordinates by radio. Simultaneously, he communicates coordination instructions, singling out the most important stages of battle that require coordinated efforts of subordinate units. Only if the situation permits does the commander actually issue a combat order.

In abbreviated form, the combined combat order/combat instructions issued by the commander of a **battalion acting as a forward detachment or advance guard** assign missions for--

- **Company as forward security element.** Composition, including reinforcements; movement route; line to capture and hold to support deployment of (battalion) main body and time for doing so; procedures for action after the main body begins its assault.

- **Mortar and attached artillery units.** Procedures for fire support of forward security element and main body. Readiness time and signals for commencing, shifting, and ceasing fire. Primary and alternate firing positions. Procedures for displacement in the course of battle.

- **Companies in battalion main body.** Immediate mission and direction for continuing the attack. Line of departure, time of assault, march route to line of departure, and units providing support.

- **Reserve.** Composition, place in combat formation, and direction and procedure for displacement in the course of battle.

- **Antitank unit.** Place in combat formation and procedures for displacement in the course of battle. Missions for covering flanks or likely avenues of tank approach. Firing positions (deployment lines) and procedures for occupying them. Signals for commencing and ceasing fire.

- **Air defense unit.** Place in combat formation and procedures for displacement in the course of battle. Missions (which units to cover during forward movement, deployment, and in the course of battle). Firing positions, sectors for reconnaissance of air enemy and conduct of fire. Procedure for conducting fire.

- **Other reinforcing units.** Procedure for supporting forward movement, deployment, and assault of battalion subordinates. Place in combat formation and procedures for displacement in the course of battle.

The abbreviated combat order for a **company acting as a forward security element** would include missions for--
- **Platoon as combat reconnaissance patrol.** Composition, including reinforcements. Combat mission. Procedures for actions on encountering the enemy and for reporting the situation.
- **Platoons in company main body.** Combat mission. Procedures for actions on encountering the enemy.
- **Reinforcing units.** Place in company march and battle formations. Missions to be ready to execute.

In assigning missions to subordinate platoons, the commander of a **company acting as part of the battalion main body** indicates the combat mission, line and time of departure, and coordination procedures. Once the meeting battle begins, the commander of a company acting as the forward security element would indicate the very same data in assigning combat missions to his subordinate platoons.

Combat Instructions

Due to time constraints, the issuing of combat instructions is not a separate step here. The battalion (company) commander must organize fire engagement of the enemy, coordination, comprehensive support of battle, and C^2 during the development of his decision and the combat order. Thus, the organization of a meeting battle essentially ends with the assignment of combat missions to subordinates.

Defense

In the defense, the battalion (company) commander goes through the same steps as in the offense. However, the content of each step is somewhat different.

Clarification of Mission

Clarifying the mission ensures that decision making for shifting to the defense is in accordance with the brigade (battalion) commander's concept. The battalion (company) commander receiving the mission must understand the goal of the defensive battle, the senior commander's concept, and (above all)--
- The direction for concentrating main efforts.
- The holding of which terrain sectors supports stability of the battalion (company) defense.
- Procedure for engaging the enemy by fire of organic and attached weapons during his forward movement, his assault on the forward edge, and his destruction in the depth of the defense.
- Objectives (targets) to be engaged by the senior commander's weapons in support of the battalion (company).

In analyzing the mission, the commander also has to understand his own battalion's (company's) role in the senior commander's concept. This includes--
- Its combat mission.
- Its place in the brigade (battalion) combat formation.
- Its role in the upcoming battle.
- Readiness time to perform the mission.
- The missions of adjacent units and procedures for coordinating with them.
- The time for occupying the defense.

- Readiness time of the system of fire.
- The sequence and time periods of engineer preparation of the battalion defensive area (company strongpoint).

At the end of his mission analysis, the battalion (company) commander usually determines the following:
- On which axis and on holding which sector he must concentrate main efforts and for what actions he must be ready.
- How much time is available for organizing the defense and how to maintain coordination with adjacent units.

Time Calculation

The commander must carefully plan the use of the time between receipt of the mission and the time for occupying the battalion defensive area (company strongpoint). He must distribute time for the following actions:
- Analyzing the mission and determining measures that require immediate attention.
- Issuing instructions to subordinate commanders on preparing to perform the combat mission and on the time and procedure of work on the terrain.
- Preparing subordinate units to perform the combat mission.
- Estimating the situation.
- Making the decision and communicating it to subordinate commanders.
- Briefing the decision to the next higher commander (brigade for battalion; battalion for company).
- Participating in ground reconnaissance conducted by the senior commander.
- Conducting ground reconnaissance with the commanders of subordinate companies (platoons) and attached units.

- Issuing verbal combat order and instructions on coordination, comprehensive support of the attack, C^2, and the system of fire.
- Work of company commanders (platoon leaders) with platoon (squad) leaders for organizing battle on the terrain.
- Return of commanders/leaders and practical work with their own units.
- Occupying platoon defensive positions, company strongpoint, (and battalion defensive area).
- Report of subordinate company commanders (platoon leaders) on occupation of strongpoints (positions).
- Report to brigade (battalion) commander the occupation of the battalion defensive area (company strongpoint).

Estimate of Situation

In estimating the situation, the battalion (company) commander clarifies the following:
- Enemy force composition, situation, status, capabilities, and degree of protection; possible forward movement routes and deployment lines. Probable axis and time of launching an attack. The strong and weak points in the nature of enemy tactics.
- Composition of the commander's own force (organic and reinforcing units), their situation, status, capabilities, degree of protection, and state of supply.
- Composition of adjacent units, their situation, and the nature of missions they are performing.
- Nature of terrain, on approaches and in the depth of the defense, and its effect on battalion (company) combat actions.

- The most likely directions of enemy aircraft and helicopter operations at low altitudes.
- The NBC situation.

In addition, the estimate of the situation takes into account the weather, time of year and day, and their effect on preparing and conducting defensive battle. As a result of the situation estimate, the commander draws conclusions, on which he subsequently bases his decision.

Commander's Concept (Decision)

The basis for the decision is the commander's concept. The concept specifies--
- Axis of concentration of main efforts and terrain sectors on whose holding the stability of the defense depends.
- Procedures for fire engagement of the enemy on his approach to the forward edge, his deployment, and his launching of the attack.
- Procedures for destroying an enemy who has penetrated the defense.
- Combat formation and system of strongpoints and firing positions.
- Methods of deceiving the enemy.

Commander's Reconnaissance

After making his decision and communicating it to his subordinate company commanders (platoon leaders), the battalion (company) commander moves forward to participate in the senior commander's ground reconnaissance. Then he conducts ground reconnaissance with his own subordinate company commanders (platoon leaders). During this reconnaissance, he usually studies the terrain, designates reference points, and updates the following:
- Enemy situation, his possible forward movement routes (assembly areas) and deployment lines, and likely tank avenues of approach.

- The trace of the forward edge of friendly troops, defensive area (strongpoint) boundaries, and battalion (company) missions.
- Axis of concentration of main efforts and terrain sectors on whose holding the stability of the defense depends.
- Trench and communications trench trace, company strongpoints (platoon defensive positions), combat security outposts, and locations for fire ambushes.
- Positions of reinforcing units.
- Zones of fire of companies (platoons) and fire concentration sectors.
- Primary and alternate positions of organic and attached artillery; firing positions and zones of fire; fire concentration sectors.
- Defensive fire lines of units (weapons) intended for securing flanks and boundaries with adjacent units and gaps between companies (platoons).
- Primary and alternate firing positions for air defense unit and its maneuver routes.
- Axes and deployment lines for counterattacks by second echelon (reserve).
- Sequence and times for engineer preparation, locations for laying minefields and passages left in them, and locations of dummy strongpoints, positions, and trenches.
- Measures for protecting against enemy weapons of mass destruction and high-precision weapons, securing boundaries and flanks, and protecting against airborne and airmobile assaults.
- Locations of COP and rear service units, as well as motor vehicles of dismounted infantry units.

Combat Order

In the combat order for defense, the battalion (company) commander indicates the following:

- **First paragraph:** brief conclusions from estimate of enemy situation.
- **Second paragraph:** objectives (targets) to be engaged by senior commander's weapons ahead of the battalion (company) defense frontage, and missions of adjacent units.
- **Third paragraph:** battalion (company) combat mission and the commander's concept. The concept begins with the words "**I decided....**"
- **Fourth paragraph:** the words "**I order...**" followed by combat missions for--
  - ◊ **First-echelon companies (platoons).** Means of reinforcement, strongpoints (defensive positions), and axes for concentrating main efforts. Missions for repelling an attack and destroying an enemy who has penetrated the defense. Number of trenches and their trace; zones of fire, secondary sectors of fire, and fire concentration sectors. Forces and assets to secure flanks, boundaries, and gaps. Supporting units.
  - ◊ **Second-echelon company (platoon).** Same as for first-echelon companies (platoons). In addition, for the company only, the axes and deployment lines for counterattacks. For tank or mechanized infantry company, also lines of firing positions.
  - ◊ **Reserve.** Strongpoint (concentration area), missions to be ready to execute. For tank or mechanized infantry company, also lines of firing positions.
  - ◊ **Fire ambush.** Composition, location, missions for destroying an attacking enemy and procedures for actions after performing the mission.
  - ◊ **Mortar and attached artillery units.** Procedures for fire support of combat security outpost. Missions for fire destruction of the enemy on his approach to the forward edge, his deployment, his launching of the attack, and his penetration of the defense. Missions for support of second-echelon counterattack. Primary and alternate firing positions.
  - ◊ **Antitank unit.** Place in combat formation and direction of possible actions, deployment lines, procedures for occupying them, and missions to be ready to execute. Signals for commencing and ceasing fire. Procedures for post mission actions.
  - ◊ **Air defense unit.** Missions, firing positions, sectors for reconnaissance of air enemy and conduct of fire. Time and degree of readiness. Procedure for conducting fire.
  - ◊ **Unit assigned to combat security outpost.** Position and mission. Weapons assigned for support and procedures for calling in their fire. Procedures for withdrawal.
- **Fifth paragraph:** Expenditure of missiles and ammunition for conducting defensive battle.
- **Sixth paragraph:** Readiness time to perform the combat mission, time of occupying the defense, and readiness time of system of fire and engineer obstacles. Sequence and time for CCD measures and engineer preparation of the battalion defensive area (company strongpoint).
- **Seventh paragraph:** Place and time of deployment of COP. Designation of one subordinate company commander (platoon leader) as deputy to assume command if the commander becomes incapacitated.

Coordination Instructions

After assigning combat missions, the battalion (company) commander organizes co-ordination by missions, probable axes of enemy attack, time, and place. He issues instructions to coordinate the actions of companies (platoons) among themselves and with the actions of fire ambushes, artillery units and other weapons, and adjacent units. There are specific instructions for destroying the enemy during his movement toward the forward edge, his deployment, and his launching of the attack. Other instructions cover repelling an assault and destroying the enemy on an axis of possible penetration. In units designated by the brigade (battalion) commander to conduct counterattacks, the battalion (company) commander indicates the axes of counterattacks and missions for subordinate units. He directs some battalion (company) assets to destroy the enemy by fire, while counterattacking units move forward, deploy, and launch an assault.

The battalion (company) commander also issues instructions for reconnaissance, protection against weapons of mass destruction and high-precision weapons, CCD, engineer support, NBC protection, and logistics support.

Platoon and Squad C² Process

In either offense or defense, the platoon or squad leader performs an abbreviated version of the C² process described above. The paragraphs below highlight the differences.

On receiving the combat mission, the platoon (or squad) leader performs most of the same steps as his battalion or company counterpart:

- Clarification of mission.
- Estimate of situation.
- Decision.
- Commander's reconnaissance.
- Combat order.

- Organization of coordination, combat support of battle, and C².

The squad leader does not conduct his own ground reconnaissance; however, he participates in the platoon leader's and possibly even the company commander's reconnaissance. The squad has a strictly defined combat mission, in accordance with the platoon's mission. In the attack, it is to destroy enemy personnel and weapons on its axis of advance. In the defense, the squad mission is to hold a designated position and prevent enemy penetration through it into the depth of the defense. The squad leader's combat order specifies missions for individual personnel in the squad.

Another difference is that the platoon (squad) leader pays less attention to calculating the time available for various steps in this C² process. This is because he has relatively little time in comparison to commanders at company level and above. The platoon (squad) leader must compress all the steps and move on quickly to the following tasks:

- Organizing preparation of personnel, weapons, and equipment for battle.
- Checking platoon (squad) readiness to perform the combat mission.
- Reporting platoon (squad) readiness to the company (platoon) commander.

COMMUNICATIONS

The OPFOR recognizes that it cannot effectively control the battlefield actions of combined arms' formations without good communications. It realizes that enemy forces will continually strive to disrupt its communications. To counter this threat, the OPFOR stresses redundancy in communications modes and equipment. Much of this redundancy entails using means outside the realm of traditional military communications methods, such as the national phone system and cellular phones.

Principles

The following general principles apply to military communications:

- Security is a prime consideration for selecting the means of communications.
- The responsibility for maintaining communications is from higher to lower. If the higher unit cannot establish communications, the responsibility moves to the subordinate unit. Units establish lateral communications from right to left.
- Wire is the primary means of communications in defensive situations. Wire encompasses the military landline and the national telephone service as a single system. Radios are the backup and only become the primary means when the landline system fails. Couriers can augment either wire or radio.
- Command nets normally provide "skip echelon" communications with subordinates two levels down. This communications structure allows, for example, a district or division to control a battalion, or a brigade to control a company, if necessary.
- The organization of communications to meet immediate tactical requirements is a responsibility of the commander at each tactical level.

Equipment

OPFOR traditional field communications equipment range from simple, easy-to-operate electronic devices to complex, vehicle-mounted equipment that requires highly skilled operators. OPFOR ground force radios include low-power, frequency modulated (FM) and amplitude modulated (AM) sets of manpack and vehicle-mounted types, medium-power high frequency (HF) radio stations of a heavy mobile variety, and multichannel radio-relay equipment.

The OPFOR realizes that only the speed and flexibility of radio communications meet the demands for C^2 on the modern battlefield. However, it also stresses the importance of being able to employ other means of control to supplement or, if necessary, to replace radio communications. The signal company that supports the brigade and its subordinates includes not only a radio platoon, but also a wire and telephone platoon. In fast-moving tactical situations, however, the use of wire is often not practical.

During periods of radio silence or disruption of radio communications, the OPFOR employs messengers, and visual and sound signals. Whenever possible, the OPFOR prefers personal contact between commanders and their subordinates. Barring that, messengers are the preferred means for delivering combat orders. At battalion level and below, units use visual or sound signals to pass simple messages and instructions.

Nets

The OPFOR uses the following types of communication nets:

Command nets. The commander uses these primarily to pass combat orders. Channels generally are direct from a superior to his immediate subordinates, but they also permit skipping echelons.

Staff nets. The chief of staff uses these for directing other staff elements at his level and for keeping subordinate and superior staffs informed of his commander's intentions. The chief of artillery at division and brigade has his own staff communications for control of units subordinate to him and to direct the actions of similar forces at the next lower level. The chiefs of engineer and chemical defense use the main staff communications network.

Air defense nets. These include air surveillance nets to radar sites, air warning nets, and air defense control nets connecting higher and lower staffs and air defense units.

Logistics nets. Logistics elements use these to control supply, transport, medical, and other support services at all levels down to battalion. These nets place more reliance on landline, cable, and wire than for the other types of net.

Liaison nets. These nets establish links between ground force units involved in coordinated action, and from supporting units to supported units. Each liaison officer provides his own communications equipment to establish a link with his parent unit.

All levels of command from army or military region to brigade have signal units either allocated or assigned to them. These units support internal headquarters and provide communications with higher, subordinate, and adjacent units. At the tactical level, each mechanized infantry division has a signal battalion; motorized and light infantry divisions have an organic signal company.[5] Each separate or divisional brigade has a signal company to support itself and its subordinate units. Only mechanized infantry units have organic signal troops at battalion level.

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[5] During wartime, the motorized and light infantry divisions would probably receive additional signal support from the national level.

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The OPFOR defines **march** as the organized column movement of troops along roads and cross-country routes to a designated area or line. It uses two main types of march: **administrative** and **tactical**. (See Figure 3-1.) The type of march employed depends on the probability of contact with the enemy. This chapter concentrates of the tactical march.[1]

ADMINISTRATIVE MARCH

An administrative march is appropriate in moving where the chance of contact with the enemy is nil, or at least confined to airborne or heliborne forces. However, tactical considerations still apply. The risks of air and missile attacks and the possibility of enemy forces operating in the OPFOR rear are always present. Even administrative marches must allow a smooth and rapid transition to tactical march formations.

Order of March

In the depth of friendly territory, the main purpose for moving in columns is administrative convenience. When a meeting battle is unlikely, common practice is for like types of vehicles to move in separate columns according to their capabilities. This allows high rates of advance and decreases pressure on personnel and combat equipment. Vehicles of similar type, speed, and cross-country capability may move together in packets rather than mixed with other ve-

hicles as they are when prepared for combined arms combat. Tracked vehicles and heavy equipment may move on one route (preferably paved), while wheeled vehicles move on another route (possibly unimproved dirt road). Nevertheless, tactical considerations dictate that certain units (engineer, for example) deploy throughout the various march columns, regardless of vehicle type.

Route Allocation

Two or three routes are normally sufficient for a division in an administrative march. A brigade moves on one or two routes. Within the brigades, each battalion marches on a single route. Where possible, each unit has an alternate route, in the event the primary route becomes unusable. Lateral routes permit maneuver from one road to another. The OPFOR does not limit roads to those with hard surfaces. Secondary gravel or country dirt tracks will suffice.

Dispersion

A brigade main body marching in one column can be up to 50 km long (exclusive of march security elements). Therefore, a division column using two routes is about 100 km long. A division using three routes is about 80 km long. Within an army, an interval of 80 to 100 km separates first- and second-echelon divisions.

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[1] For more detail on administrative march, see the March section in Chapter 4 of the *Light OPFOR Operational Art Handbook.*
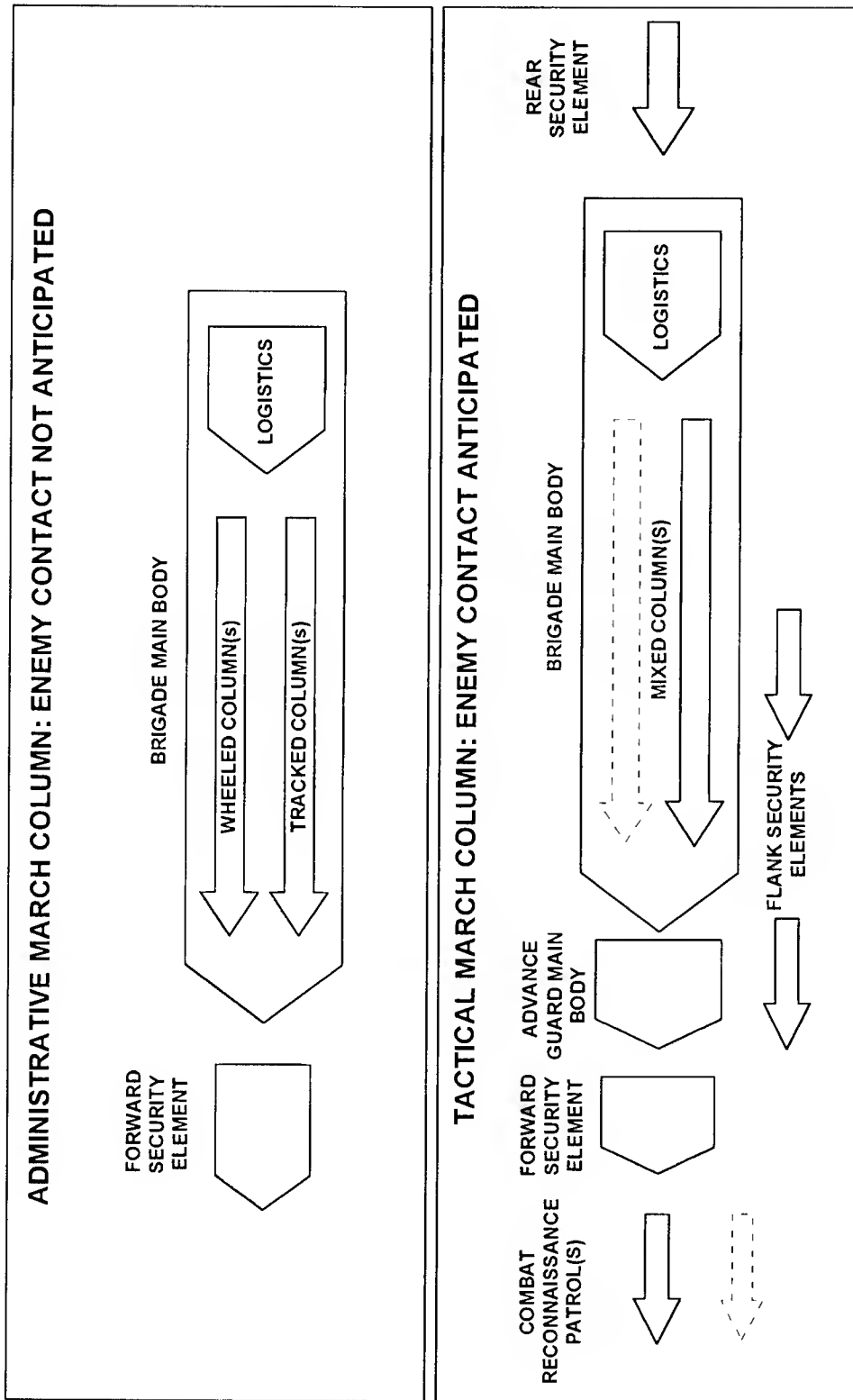
Figure 3-1. Administrative and tactical march columns (brigade-level).

3-2

March Security

First-echelon brigades always deploy some form of march security, even on administrative marches. However, a second-echelon brigade following immediately behind the first could dispense with these. The number and strength of march security elements increase as a unit approaches its line of commitment. Security patrols and outposts deploy around rest and assembly areas.

Support Elements

Units conducting administrative marches may receive combat support and combat service support from higher headquarters to supplement their own assets. The positioning of these support elements is as follows:

Primary responsibility for air defense lies with the district through whose rear area the tactical unit is marching. In the division it rests with the comander of the air defense regiment. The marching unit's organic air defense assets deploy throughout the column. The division or district concentrates resources to cover obstacle crossings and other chokepoints.

Chemical reconnaissance and protection assets also deploy tactically within columns, in case of enemy strikes during the march.

Engineer reconnaissance, route-clearing, and obstacle-crossing units deploy throughout march columns. The primary responsibility for maintaining routes still lies with the higher headquarters.

Higher headquarters are responsible for maintaining, refueling and feeding units marching in their rear areas. This ensures commitment of units from the march into battle at full strength and with their basic combat loads intact.

TACTICAL MARCH

The OPFOR uses the tactical march when moving into or through a battle area, **where contact with enemy ground forces is likely.** It is keenly aware of the importance of tempo and the likelihood of meeting battles on the modern battlefield. Therefore, it emphasizes that, when contact becomes possible, march organization must reflect the desired organization for combat. This ensures the march formation is ready to enter battle with little notice.

A unit may conduct a tactical march when--

- Moving from a rear assembly area to a forward assembly area or assault position.
- Leaving an assembly area to launch an attack from the march.
- Moving forward in anticipation of a meeting battle.
- Conducting a pursuit.
- Conducting a passage of lines.
- Transferring laterally to a new area or large formation.

Commanders ensure their troops are ready to perform a march with minimum warning and preparation. Units frequently rehearse the march, with commanders strictly controlling its conduct. Units accomplish rapid column movement in march formation. Subsequent deployment from march column into prebattle and battle formation involves standard battle drills. These formations and drills allow a rapid transition into combat while maintaining maximum security, speed, and firepower.

Transition from Administrative March

Tactical marches begin in an assembly area where units reorganize themselves from the order in which they completed the administrative march. In the assembly area, units carry out final maintenance and logistics checks.

Order of March

The new march order depends on the mission, the terrain through which the OPFOR must march, and the nature of the enemy threat. There is no time to stop and transition from an administrative march column to a combat formation. The formation must permit a smooth and rapid deployment into battle in accordance with the commander's plan. The formation must also include sufficient march security to prevent the enemy from disrupting that deployment. The commander and his staff conduct march planning in as much detail as time and information permit.

The tactical march formation has units in preformed groupings tailored for combat against the expected enemy in the terrain where battle may occur. This makes it possible to strike first against the enemy in a meeting battle and to surprise a defending enemy through the speed with which the OPFOR can mount an attack. The tactical march formation must reflect the potential combat formation in terms of echelonment. Thus, a unit marches in two echelons or a single echelon and a mobile reserve. The nature of the terrain and the enemy threat can determine the echelonment, as well as the number of routes on which a unit marches.

Route Allocation

The OPFOR applies the following **norms** to tactical march routes:
- A division receives a zone of advance, normally with two to four march routes.
- A brigade normally receives one or two march routes.
- A battalion receives one march route.

Dispersion

Tactical march formations must maintain dispersion laterally and in depth. This dispersion is critical under NBC conditions or when the enemy has high-precision weapons or the capability of achieving local air superiority. The commander balances the requirement for dispersion in depth with that for timely commitment of his forces in case of enemy contact.

A division normally marches on two to four routes. Separation between routes is 3 to 4 km. If possible, a division would move on three or four routes. The 80- to 100-km interval between first- and second-echelon divisions remains constant. However, reconnaissance patrols and march security elements from a second-echelon division may move within that interval.

The **length of a march formation** depends on three factors:
- The intervals between units and vehicles in each column.
- The number of march routes.
- The type(s) and organization of the forces on each route.

Elements Involved	Normal Intervals	Variations
Vehicles in a company	25-50 m	Increased at high speeds, in contaminated or rugged terrain, or on icy roads. May decrease at night, or increase (to 100-150 m) in open terrain, when threatened by aviation or high-precision weapons.
Companies in a battalion	25-50 m	Up to 300 m or more under threat from aviation or high-precision weapons.
Battalions on the same route	3-5 km	Can vary as contact becomes imminent.
Brigades on the same route	5-10 km	

Figure 3-2. Typical OPFOR tactical march intervals.

Moving from the final assembly area to the line of commitment, a first-echelon division can spread out more to observe **tactical intervals**. For example, intervals between first-echelon brigades and the division's second echelon or reserve grow from 5 km to 10 km. There should be 3 to 5 km between battalions in wheeled or tracked vehicles. For dismounted battalions on the same route, the interval may be as little as 500 meters. Figure 3-2 summarizes typical OPFOR tactical march intervals for movement in vehicles.

Figure 3-3 illustrates possible variations of column length for the main body of a motorized infantry division marching in vehicles. The typical distances shown there reflect the prescribed tactical intervals between vehicles, battalions, and brigades and the number of vehicles typically found in each organization. The assumption is that first-echelon brigades have two battalions in their main body, with the third battalion providing march security. A second-echelon brigade would probably have three battalions in its main body, with minimal march security. Therefore, the column length for the motorized infantry division's main body could be up to 80 km (excluding march security elements). For a mechanized infantry division, it could be up to 100 km. In front of the main body, division and brigade reconnaissance patrols, forward detachments (FD), and forward march security add to the overall length of a division in the march.

1st-Echelon Bde Main Body		Interval After 1st Echelon	2d-Echelon Bde		Reserve Bn	Total Column Length
(1 Route)	(2 Routes)		(1 Route)	(2 Routes)	(1 Route)	
15-30 km	-	5-10 km	20-40 km	-	-	40-80 km
15-30 km	-	5-10 km	-	10-20 km	-	30-60 km
15-30 km	-	5-10 km	-	-	3-5 km	23-45 km
-	5-10 km	5-10 km	20-40 km	-	-	30-60 km
-	5-10 km	5-10 km	-	10-20 km	-	20-40 km
-	5-10 km	5-10 km	-	-	3-5 km	13-25 km

Figure 3-3. Typical column lengths for motorized infantry division main body.

For motorized infantry units, the length of march columns also depends on whether or not troops use trucks for transport. For a brigade to move less than 50 km or a battalion less than 30 km, motor transport may not be necessary. However, battalions or companies can use motor transport even for shorter distances when--

- Deploying an infantry unit in a reconnaissance role.
- Conducting a pursuit of enemy troops.
- Moving a reserve unit to a different axis.
- Swiftly maneuvering units to stage flank or rear attacks.
- Reacting to an enemy penetration or airborne insertion into the OPFOR rear.

It is possible to use motor transport up to a certain point and then dismount the infantry troops for the final phase of movement.

March Security

Once in the combat zone, the OPFOR deploys stronger march security to the front and on any open or threatened flank. The types and strengths of march security elements can vary widely according to the circumstances. (See Division, Brigade, and Battalion Tactical March, below.)

March Planning Factors

Having received an order to conduct a march, the OPFOR commander issues preliminary orders to his subordinate commanders. He then makes an estimate of the situation. Based of his estimate, the commander selects and assigns routes, if not already specified by his senior commander. The commander's estimate also influences dispersion, rate of march, and order of march of subordinate units. If possible, the commander orders a route reconnaissance to--

- Determine route conditions.
- Locate contaminated areas, chokepoints, or obstacles.
- Determine requirements for engineer or decontamination support.

Lacking specific information, he may have to plan the march based on norms described in the following section.

Average Rate of March

Average rate of march is the ratio of the entire route covered (or planned) to overall movement time, not counting time for halts. Average rate of march is not a constant value. It depends on--

- The combat situation.
- The assigned mission.
- The commander's ability to lead columns.
- Conditions of route and weather.
- Organization and support of the march.
- The mechanical condition of vehicles.
- The march proficiency and physical condition of dismounted troops.

On most roads, wheeled vehicles move faster than tracked vehicles or mixed columns (wheeled and tracked). Figure 3-4 illustrates average movement rates of march columns on different surfaces. When forming up columns and moving from the assembly area to the start point of the march, units normally travel at between one-half and three-fourths of the average rate. Columns making contact with the enemy may move at maximum speeds. However, truck-mounted infantry may have to dismount at a safe distance and cover the remaining distance on foot before engaging the enemy.

Column Type	PavedRoads (km/hr)		Dry, Dirt, Roads (km/hr)		Muddy, Hilly, Urban Roads (km/hr)	
	Day	Night	Day	Night	Day	Night
Wheeled	30 to 40	25 to 30	20 to 25	18 to 20	10 to 15	8 to 12
Tracked/Mixed	20 to 30	15 to 20	15 to 20	12 to 15	10 to 12	8 to 10
Dismounted	4 to 5	4 to 5	4 to 5	4 to 5	4 to 5	4 to 5
Note: Under normal conditions, dismounted (foot) march rate is 4 km/hr, or 5 km/hr with a light load.						

Figure 3-4. Average rates of march.

Length of Day's March

Another measure of march performance is the length of a day's march. This is the distance the troops can cover during the march in a 24-hour period. The daily march distance depends on the speed of march of the columns, the length of the marching distance, and the physical capabilities of the drivers and combat and transport vehicles. OPFOR experience shows that vehicle drivers can maintain combat effectiveness during a march of 10 to 12 hours. For dismounted infantry, 10 to 12 hours would constitute a forced march; the regular march is 7 to 9 hours. Figure 3-5 gives average daily march performance data for wheeled and tracked or mixed columns, as well as for dismounted infantry.

Thus, the length of the daily march of the motorized infantry troops in motor transport columns can be up to 480 km per day. For tracked or mixed vehicle columns it is up to 350 km. For dismounted infantry, it ranges from an average of 30 km for a regular march up to 45 km for a forced march. These maximum ranges assume optimum conditions. In mountains, jungles, swamps, deserts, and other difficult areas, the average rate of movement and the length of the daily march can decrease sharply.

Order of March

The order of elements within a march column depends on the combat situation and on the expectation of enemy contact. In any march, the commander locates combat and support elements within the column to ensure efficient transition into combat. Prior to the march, he establishes the column organization to minimize or preclude any reorganizing before commitment to battle.

The main body of the combat force employs reconnaissance and forward security forces in most situations. The reconnaissance forces move far ahead of the security force. They try to avoid contact while sending back intelligence to the main body commander. The security force is responsible for ensuring the unhindered movement of the main body. To accomplish this, it may engage enemy forces. An engineer movement support detachment often moves in the same area as the forward security force, also supporting the movement of the main body.

Within the main body, infantry units and tanks normally move at or near the head of the column. So do the commander and key staff officers. Attached and organic artillery elements move well forward in the column; occasionally, they travel ahead of the tanks and infantry. Air defense, engineer, antitank, and chemical reconnaissance elements travel dispersed throughout the march column.

Column Type	Paved Roads (km per day)	Dry, Dirt Roads (km per day)	Muddy, Hilly, Urban Roads (km per day)
Wheeled	250-480	180-300	80-180
Tracked/Mixed	150-350	120-240	80-140
Dismounted	30-45	30-45	30-45

Notes:

1. For vehicles, calculation is for march of 10 to 12 hours. Distances shown cover the range from 10 hours at night rate to 12 hours at day rate. Remaining 12 to 14 hours spent as follows:
   (a) Maintenance 3 to 4 hours
   (b) Serving hot meal 1 to 1.5 hours
   (c) Deployment and camouflage 1 to 1.5 hours
   (d) Movement to line of departure 1 to 1.5 hours
   (e) Rest 4 to 8 hours
   For dismounted infantry, calculation is for a march of 7 to 9 hours per day.

2. Rest halts for vehicles: Short halt of 20 to 30 minutes every 3 to 4 hours (first one after 1 to 2 hours). Long halt of up to 2 hours necessary when conducting a full day's march of 10 to 12 hours.

3. Rest halts for dismounted infantry: Short halt of 10 minutes after 50-minute march (first one after 30 minutes). Long halt of up to 2 hours necessary when conducting a forced march of 10 to 12 hours.

Figure 3-5. Daily march distances.

The main body is responsible for its own flank security. Combat service support elements normally bring up the rear of the column, followed at a distance by a rear security element.

Control Measures

The commander and his staff also establish control measures to ensure that the unit arrives in good order at the area designated for march completion. These measures include the following:

Start Point

A start point indicates the beginning of a march. The commander designates it arbitrarily, based on visible reference points. It is normally 5 to 10 km from the assembly area, to allow columns to form and reach the required march speed as they pass it. By this time, elements in the column also should have established the correct march intervals.

Control Lines

Commanders establish control lines (or points) to ensure timely and orderly movement. The number of control lines depends on--
- Distance the march is to cover.
- Terrain and weather.
- Time of day or night.
- Road conditions.

Control lines usually indicate a period of 3 to 4 hours of movement. Elements of the force must cross these control lines or points at designated times.

Halts

Commanders plan halts and rests to preserve the strength of personnel and allow for maintenance of equipment. Designated halt areas often coincide with control lines.

For **wheeled or mixed columns**, the schedule normally includes **short halts** for every 3 to 4 hours of movement. A short halt may last up to an hour, but 20 to 30 minutes is the norm. The column formation remains intact at the halt, with units maintaining their intervals. A full day's march of 10 to 12 hours necessitates one **long halt**, lasting no more than two hours. (In a forced march of 12 to 14 hours, the long halt can last 2 to 4 hours.) The long halt occurs during the second half of a day's movement. Units disperse off the road in camouflaged positions and the soldiers use the time to perform any needed maintenance, refueling, resupply, or decontamination. They can also receive a hot meal at a long halt. Long halts are not scheduled at night, allowing maximum time for night movement.

Dismounted columns normally halt for 10 minutes after every 50 minutes of movement. The first rest halt is after 30 minutes' march. During the second half of a day's march, they make a **long halt** of up to 2 hours for personnel to eat and rest.

Traffic Control

March planers designate traffic control posts for every 3 to 4 hours of movement. These posts help regulate the rate of movement and ensure an organized march. To assist movement and enforce march control, each division headquarters has specialized traffic control personnel. Traffic control personnel from subordinate levels may augment them. Before the march, they normally take up posts at critical points: **turns, intersections, chokepoints**, and **control lines**. The use of traffic regulators decreases reliance on maps and radio communications. Traffic regulators also enforce camouflage and light discipline among march units.

Communications

The OPFOR restricts the use of radios during the march to minimize the risk of detection, jamming, and enemy attack. Maneuver units march under radio silence, relying on hand and arm signals, flags, and light signaling devices. They practice these in battle drills. During long halts, they may use wire communications. Specialized traffic regulators may operate separate wire and radio nets to aid movement of the march columns. The OPFOR also employs motorcycle-mounted couriers extensively.

Camouflage, Concealment, and Deception

The OPFOR recognizes the problem of concealing the march of a major formation from modern intelligence-gathering means. It also recognizes the effectiveness of deep interdiction executed with long-range, high-precision conventional weaponry, or even with conventional air power. These threats increase the need for camouflage, concealment, and deception. Measures used to cover tactical marches include the following:

- Strict secrecy regarding march routes, assembly and rest areas for road marches. (Even division commanders receive no more information than the next day's stage.)
- Secrecy regarding loading and unloading areas for motorized marches.
- Tight emission control.
- Avoidance of population centers where possible.
- Marching only at night when possible.
- Attention to camouflage in rest areas.
- Use of disinformation and false radio traffic.

It may not be possible to fully conceal the conduct of a march. It may, however, be possible to conceal the size of a formation and to simulate march columns on false routes. For instance, the OPFOR makes extensive use of corner reflectors. These and other devices can confuse enemy radars as to which are real and which are false march routes, and perhaps to conceal the direction of a march. Going against norms known to enemy intelligence collectors may also help to confuse and deceive. Such norms could include speeds of movement, column intervals, or locations of rest areas.

March Completion

The march ends when the march formation crosses the last control line and enters a new assembly area. It can also end when units enter prebattle formation or combat.

Logistics Support

Logistics support of the march has two phases: before the march and during the march. Before the march, logistics elements move forward to replenish supplies, perform maintenance, and to evacuate the wounded. Refueling and maintenance elements then move ahead to halt or rest areas. Units make every attempt to replenish fuel reserves on vehicles before combat. During the march, units receive logistics support in rest areas or at halts. If vehicles break down between these areas, maintenance personnel move them off the road and repair them there. Wounded personnel receive medical aid in-place, with medics evacuating the seriously wounded.

Control of logistics during the march relies on detailed planning and coordination between chiefs of the rear, commanders of logistics elements, and the supported commander. At brigade and division levels, the deputy commander for the rear (chief of the rear) establishes and heads a rear command post (CP). He locates the rear CP where he can maintain the best control. It normally moves at the head of the column of logistics elements, or on the main axis if there is more than one column.

Engineer Support

Engineer support for the march allows the force to overcome or bypass those areas that would disrupt movement. Engineer units may form movement support detachments and mobile obstacle detachments. (For more detail, see Chapter 11.)

Movement Support Detachment

The movement support detachment (MSD) moves up to two hours ahead of the brigade main body. This puts the MSD in the same area as the brigade's advance guard and other forward march security groupings. It tries to clear routes through or around any obstacles so that there is no delay to the brigade main body. It fills craters or constructs bypasses, bridges minor gaps, and clears and marks lanes through minefields. The work of the MSD is vital to a rapid advance and to security. If engineers do not complete their tasks in time, the main body may have to halt, disperse, and seek another route. Once the first echelon commits to battle, the MSD follows behind it to prepare the route for the second echelon.

MSDs can include various types of engineer equipment for clearing and improving march routes. These can include--
- Bulldozers, cranes, and dump trucks. Truck-launched bridges.[2]

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[2] Tank brigades have tank-launched bridges instead of the truck-launched version.

3-10

- Mine detectors and mineclearing equipment.
- Trucks to carry explosives and metal track.

These assets come primarily from engineer companies organic at brigade and division level.[3] With these resources, a division can form several MSDs. Their number and strengths depend on the number of routes they must support. A brigade moving on a single route could have an MSD of company strength, possibly reinforced with divisional engineer assets. If a brigade moves on two routes, a given route might have only a platoon- or squad-sized MSD. An MSD may have infantry troops attached for protection. Chemical reconnaissance troops often form part of the MSD.

A company-sized MSD can have two or three subgroups. They are the reconnaissance and clearing group (which can be one consolidated group or two separate ones), and the road/bridge construction and repair group. Grouping depends on terrain and the tactical situation and can vary during the course of the march.

Mobile Obstacle Detachment

The mobile obstacle detachment (MOD) protects advancing columns by laying minefields and creating expedient obstacles on likely enemy approaches. Its primary assets are mechanical minelayers from the mine warfare platoon of a brigade- or division-level engineer company. It may also include combat engineers for demolitions work, ditching machines, or other engineer equipment for creating obstacles. It ordinarily travels behind the march security elements and ahead of the bri-

gade main body. Once contact with the enemy occurs, it often moves and acts in conjunction with the antitank reserve.

DIVISION TACTICAL MARCH

The basic formation for achieving maximum rates of advance or maneuver in the attack is the march formation. Mechanized, motorized, and light infantry divisions use similar march formations.

Order of March

The division order of march depends on the enemy situation, mission, terrain, and the commander's concept for deployment into combat. The division may advance along two to four march routes, with division and brigade reconnaissance patrols and advance guards and/or FDs preceding the main body. The division's main body may march in two echelons or one echelon and a reserve. Figure 3-6 shows an example of a motorized infantry division's tactical march formation. The division in this example has a single echelon and a reserve. This formation requires the use of at least three routes. Many other variations are possible, and OPFOR march formations do not necessarily follow limited stereotypes.

The choice of echelonment generally depends on the nature of enemy defenses. In very difficult terrain, with poor lateral communications, the division may advance in one echelon, with a strong reserve. The same might be true when the division is marching in anticipation of contact with a weak, unprepared enemy. The division could be advancing against a covering force screening a strong defensive position. In that case, the commander hopes to avoid deploying the main bodies of the first-echelon brigades during the covering force battle, keeping them available for the penetration battle in the main defensive position.

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[3] Only the mechanized infantry division has an engineer battalion. Some military districts may also have a battalion. A first-echelon division participating in the region/army's main effort may receive additional engineer assets from the higher headquarters.
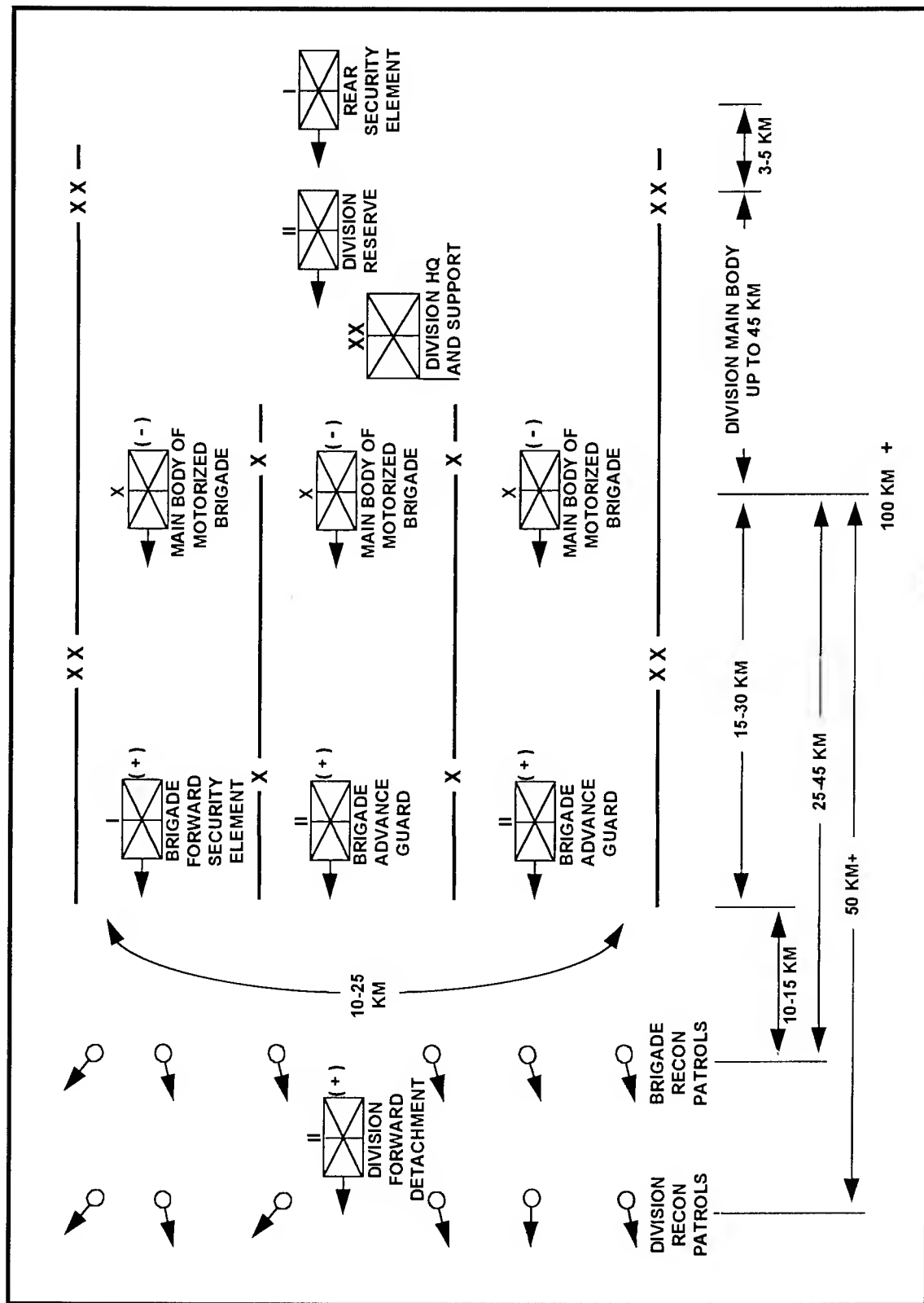
Figure 3-6. Motorized infantry division in tactical march formation (example).

3-12

Route Allocation

A division normally has an assigned zone of advance for a tactical march. Within that zone, it advances on two to four routes. Separation between routes is normally 3 to 4 km. The width of the zone of advance and the number of routes vary according to the terrain and the nature of the enemy force the division expects to encounter. The relationship between zone width and the number of routes might typically be as follows:

- 8 to 15 km on two routes.
- 10 to 25 km on three routes.
- 15 to 30 km on four routes.

Reconnaissance

In the march, the purpose of reconnaissance is to provide the commander maximum warning of enemy forces, in terms of time and distance, and to establish the strength and disposition of these forces. Reconnaissance also identifies terrain features that could slow the OPFOR rate of advance or hinder the accomplishment of the parent organization's mission.

Tracked and wheeled reconnaissance vehicles from the division's reconnaissance and electronic combat (EC) battalion deploy in reconnaissance patrols of three to four vehicles each. Under normal conditions, these patrols cover the division's entire zone of advance out to a distance of about 50 km ahead of the division main body.[4] However, most of the division's reconnaissance patrols typically concentrate on the major axes of advance and the most likely enemy concentrations. Other reconnaissance patrols from division and first-echelon brigades cover the rest of the division's zone of advance. The brigade recon-

naissance patrols normally move about 25 to 30 km ahead of the main body. In extreme cases, however, a particular brigade could push its patrols out as far as 40 to 45 km ahead on its march route.

Forward Detachment

The division commander may dispatch a forward detachment (FD) for independent missions forward of the lead brigades' advance guards. The division's FD may have the same size and composition as a brigade's advance guard (a reinforced battalion). However, the FD is **not a march security element**. Unlike the brigade advance guard, the division's FD does not need to follow a specific route of advance. The purpose of the FD is to speed the advance of the division. Its mission may be to seize key terrain (such as passes, defiles, road junctions, or river-crossing sites). Otherwise, its mission may be to facilitate the division's advance by disrupting the enemy's covering forces. It may also conduct raids against important enemy sites such as--

- High-precision weapons systems.
- Artillery positions.
- CPs.
- Logistics facilities.

The FD tries to avoid battle before it reaches its objective and before it moves off the main routes of the divisional columns.

If the division is marching in two echelons, its FD is normally a reinforced motorized infantry battalion from the division's second-echelon brigade. In the example in Figure 3-6, the division has no second echelon. In that case, the FD would have to come from one of the first-echelon brigades, at the discretion of the division commander. He would probably take it from a brigade on a less threatened route.

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[4] In extreme cases, it is possible to insert elements of the division's long-range reconnaissance company up to 100 km ahead of the main body. Insertion may be by parachute, helicopter, vehicle, or on foot.

In the march, there is no set distance between the FD and the division main body (the main body of the first-echelon brigades). That distance depends on the strength of the FD and its mission. However, it normally moves 1 to 2 hours ahead of the parent division's main body. This means that the FD normally moves ahead of or parallel to the march security elements (advance guard) of the lead brigades but behind the division's reconnaissance patrols. The FD commander can also dispatch his own reconnaissance patrols.

March Security

While reconnaissance units act as the eyes and ears of the division and its brigades, other units provide security for the main body. The OPFOR categorizes security elements by their position relative to the main body, as forward, flank, and rear. The forward security element (FSE) may be part of a larger march security force known as an advance guard. **The division does not have its own march security elements, but rather relies on those deployed by its subordinate brigades.**

There is no actual division **advance guard or FSE**. The lead brigade on each of the routes used by the division forms an advance guard or at least an FSE. The division relies on the brigades' advance guards or FSEs for forward march security. Normally, the advance guards consist of reinforced motorized or mechanized infantry battalions. A company- or platoon-sized FSE is part of a first-echelon brigade's advance guard; a second-echelon brigade may deploy only a company-sized FSE rather than a battalion-sized advance guard. In each first-echelon brigade, the advance guard tries to move about one hour ahead of the main body, but this distance may be less if it encounters resistance or obstacles.

Flank and rear security elements complete the all-around security for the march.

Each brigade provides its own flank security element(s). An infantry company from the division's second-echelon brigade or reserve would serve as a **rear security element**. Rear security elements follow 4 to 7 km to the rear of the main body. Thus, the second-echelon brigade or reserve provides rear security for the division, as well as its own local security to the front and flanks.

Main Body of First Echelon

Although the brigades are ready to deploy into battle rapidly, they remain in march formation as long as possible. The division commander approves the decision to deploy, or to bypass an enemy too strong for the advance guard to dislodge.

Division Command Posts

The division commander, in his forward COP, travels in the column of the main-axis first-echelon brigade. He is normally close to the brigade CP, ensuring quick reaction. The division's main CP accompanies the second-echelon brigade, also on the main axis. The rear CP leads the divisional logistics elements.

Artillery

The division commander, advised by his chief of artillery, coordinates the movement and fires of all organic and reinforcing artillery. He designates the column(s) in which the artillery assets should travel; their positions in the column; and plans firing positions for their employment.

The division artillery group (DAG) consists of the organic and any reinforcing artillery of a division. It moves on the main axis immediately behind the first-echelon brigades so that it can support an attack from the march. If a division is moving on the army's main axis, its columns would include the army artillery group (AAG).

Antitank artillery is not part of the DAG. The division antitank reserve may deploy centrally or move to cover the most exposed flank.

Air Defense

If marching out of contact, the division's air defense regiment, and lower-level assets, are likely to maintain radio silence, relying on army or region assets for long-range surveillance and early warning. Otherwise, medium-range surface-to-air missile assets depend on visual detection for early warning. Air defense radars are normally turned off, or only operated for short periods, to reduce vulnerability to antiradiation missiles. Radars would become active in the event of a direct threat to the division. In this case, the air defense regiment is on full alert and possibly deployed with a battery accompanying each first-echelon brigade and other batteries on the flanks of the second echelon or reserve. Another option is for the air defense regiment to move its medium-range assets in a bounding overwatch configuration to keep the march columns under an air defense umbrella.

Second Echelon or Reserve

The second-echelon brigade or reserve generally moves on the main axis. The commander may designate part of the second echelon as an antilanding reserve.

Combat Support and Combat Service Support

The distribution of combat support and combat service support assets depends on the terrain and tactical circumstances. If, for example, the division does not have major water obstacles to cross, the bulk of the engineer assets could remain in reserve in the second echelon of the division. The exception would be engineer reconnaissance and route-clearing assets assigned to MSDs. If the division had to cross a water obstacle, bridging elements would accompany the first echelon, or they might be with the forward detachment or advance guards. The chemical defense company provides chemical reconnaissance patrols throughout the division formation. If the NBC threat is high, it may be necessary to split decontamination assets between first and second echelons. The traditional position for the bulk of the division's logistics elements is at the end of the march formation. However, the division may divide its maintenance and medical evacuation assets between the two echelons. In a long march in difficult terrain, it may do the same with resupply facilities as well.

BRIGADE TACTICAL MARCH

Maneuver brigades have march formations similar to a division. These formations provide reconnaissance and early warning to the brigade commander. The formation varies according to the situation.

Order of March

The brigade order of march depends on the enemy situation, mission, terrain, and the commander's concept for deployment into combat. The brigade may advance along one or two march routes, with brigade reconnaissance patrols and advance guards and/or FDs preceding the main body. The brigade main body may march in two echelons or one echelon and a reserve.

Many other variations are possible, and OPFOR march formations do not follow limited stereotypes. Brigades on the division's flanks have to provide their own flank security elements. A brigade in the division's second echelon needs little or no forward security but must provide rear security for itself and for the

division. The same second-echelon brigade may have lost one of its battalions to serve as a division FD. As part of a single-echelon division march formation, a brigade on a less threatened axis may have lost one of its battalions to serve as a division FD or reserve. A separate brigade must provide its own all-around march security.

Route Allocation

Each brigade normally has a primary route and, if the terrain permits, an alternate route. The brigade could use the alternate route if its primary route becomes unusable or if it splits its forces on two routes. In normal terrain, a brigade advances on one route until its subordinate units begin their deployment into prebattle and battle formations.

Reconnaissance

A separate brigade's organic reconnaissance company may send out patrols that can advance up to 50 km or more ahead of the brigade main body. For the reconnaissance platoon of a divisional brigade, however, 25 to 30 km is more common. Even though division reconnaissance is moving ahead, the brigade commander has his own independent reconnaissance patrols reporting directly and immediately to his headquarters. A second-echelon brigade does not deploy such patrols until receiving comfirmation of its mission and orders for commitment.

The distance of reconnaissance patrols from the brigade main body also depends on the number and types of march security elements present. Figure 3-7 illustrates the possible relationships. If, for example, a **motorized** brigade deploys all possible march security elements at their maximum strengths and maximum intervals, these may reach up to about 30 km ahead of the main body. For another brigade requiring only minimum forward security, they may reach to less than 15 km. Ideally, brigade reconnaissance precedes march security by about 10 to 15 km. Thus, brigade reconnaissance patrols could be from 25 to 30 km ahead of the brigade main body, or in the extreme case 40 to 45 km. For a motorized brigade that elects to complete an entire march (of 50 km or less) **on foot**, march security could reach out 6 to 10 km. In that case, brigade reconnaissance patrols, also on foot, would be 5 km ahead of the lead march security element.

Specially trained reconnaissance patrols from the brigade's reconnaissance company or platoon collect the following information:
- Nature and location of enemy nuclear and chemical delivery systems.
- Movement axes of enemy columns.
- Strength and composition of enemy forces.
- Deployment lines and routes.
- Location of contaminated areas.

If the situation demands, the divisional brigade may supplement these with additional reconnaissance patrols based on regular infantry platoons.

	Tank/Mechanized	Motorized	Foot
Max. March Security	Up to 50 km	Up to 30 km	Up to 6 km
Recon Ahead of Security	10-15 km	10-15 km	5 km
Recon Ahead of Main Body	60-65 km	40-45 km	11 km
Min. March Security	Up to 15 km	Up to 15 km	Up to 10 km
Recon Ahead of Security	10-15 km	10-15 km	5 km
Recon Ahead of Main Body	25-30 km	25-30 km	15 km

Figure 3-7. Brigade reconnaissance in relationship to march security and brigade main body.

Continuous reconnaissance on the march provides for timely collection of information on the enemy and terrain in the direction of movement and on the flanks. The principal method of reconnaissance on the march is observation. Technical equipment may also collect data on the terrain and enemy. Each unit organizes all-around observation for prompt detection of the enemy.

Forward Detachment

If necessary, a brigade may send out a FD to accomplish missions similar to those of the division's FD. However, the brigade deploys only a reinforced company for this mission.

March Security

The various types of march security elements may include an **advance guard**, **security elements (forward, flank and rear)** and **patrols**. Figure 3-8 shows these elements in relation to the brigade main body. March security elements sent out from the brigade main body, advancing in increasingly larger formations, should encounter the enemy or obstacles well before the main body.

Against an enemy also on the march, security elements can--
- Prevent surprise attacks by the enemy.
- Allow each successive commander to minimize losses in a surprise encounter by meeting the enemy with the smallest possible force.
- Keep the enemy's reconnaissance from penetrating to the main body.
- Assist the main body's deployment into battle.
- Permit the maneuver of follow-on forces.

Against a defending enemy, the mission of security forces is to clear the covering force from the path of the main body. It is unlikely that these forces would assault strong positions frontally, if this is avoidable. The preferred option is to envelop the position, forcing the defender to pull back, and to attempt to destroy the withdrawing force on the move.

The strength and composition of the march security elements depend on the intensity of the enemy threat and the type of terrain. The greater the threat and more difficult the terrain, the stronger the march security required.

The distance of march security elements from the main body ensures time for deployment and organized engagement by the main body. Also, the intervals between march security entities should give the commander of the following element time for--
- Decision making.
- Assignment of missions.
- Occupation of firing positions by reinforcing artillery.
- Forward movement and deployment of his unit to engage the enemy.

Figure 3-9 shows typical intervals between the various march security elements in a brigade. These distances may decrease if security elements encounter resistance or obstacles.

Advance Guard

The most important of these elements is the advance guard. In anticipation of a clash with the enemy, the advance guard deploys up to one hour ahead of the brigade main body. For a mechanized or tank brigade, this can be as much as 20 to 30 km. For an infantry brigade on foot, it could be as little as 2 to 3 km. For truck-mounted motorized infantry, it is somewhere between those extremes, typically about 8 to 12 km.
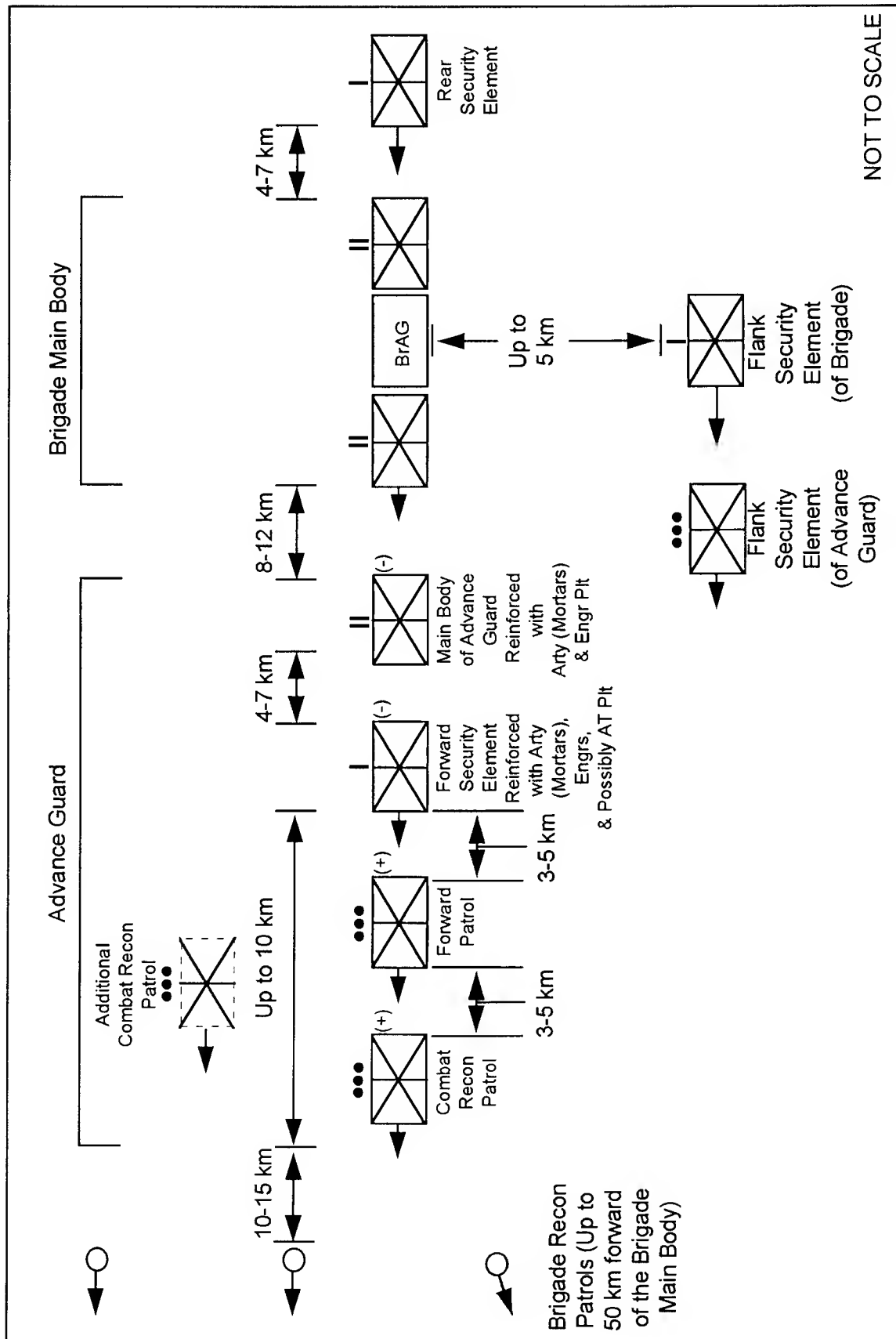
Figure 3-8. March security elements in first-echelon motorized infantry brigade (example).

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Interval Between			Tank/Mechanized	Motorized	Foot
CRP (or FP)	and	FP or ADV GD	3-5 km	3-5 km	Up to 1 km
FSE	and	ADV GD	5-10 km	4-7 km	3-6 km
ADV GD	and	MAIN BODY	20-30 km	8-12 km	2-3 km
FLANK SEC	and	MAIN BODY	Up to 5 km	Up to 5 km	2-3 km
REAR SEC	and	MAIN BODY	3-5 km	4-7 km	Up to 1 km
CRP = Combat Reconnaissance Patrol ADV GD = Advance Guard FLANK SEC = Flank Security Element			FP = Forward Patrol FSE = Forward Security Element REAR SEC = Rear Security Element		

Figure 3-9. Typical intervals between march security elements.

The advance guard precedes the main body on the same route, providing movement security and warning. It can engage and destroy enemy units, but only if that combat does not inhibit fulfillment of its primary task. The advance guards of first-echelon brigades provide forward security for the division march formation.

For a brigade, the advance guard consists of a reinforced battalion. It normally comprises about one-third of the brigade's total combat power. The advance guard of a motorized infantry brigade is a motorized (or possibly mechanized) infantry battalion reinforced with artillery, antitank, air defense, engineer, and chemical defense elements. Reinforcements may also include tanks, if they are available. The advance guard of a tank brigade is a similarly reinforced mechanized infantry battalion.

If a brigade marches on more than one route, it deploys an advance guard to ensure the security of its main axis. When exploiting a penetration or in pursuit, each first-echelon brigade is likely to employ a reinforced infantry battalion as an advance guard.

The advance guard dispatches a **FSE** to its front. The FSE is normally a reinforced company, comprising about one-third of the advance guard's combat power. On a less threatened route, it could be only a reinforced platoon. A brigade may send an FSE forward for march security even if it does not send forward an entire advance guard.

The advance guard may also send out one or more **combat reconnaissance patrols** (CRPs). The CRP is a platoon reinforced with engineer and NBC reconnaissance elements. It reports intelligence information and makes the initial contact with any enemy forces encountered. The battalion commander dispatches the CRP. Therefore, it may come from the FSE or from a company in the battalion's main body. Normally, there is only one CRP, which reconnoiters the parent brigade's primary march route and any key terrain or enemy positions along it. If the situation dictates, the battalion commander may use more than one CRP. In that case, an additional CRP could reconnoiter alternate routes, areas on the flanks of the battalion, or other areas about which the advance guard commander needs more information.

Forward Security Element

The FSE is normally a reinforced company commonly sent ahead of a first-echelon battalion or a battalion operating away from the main body (for example, an advance guard, a forward detachment, or a raiding detachment). When the threat is weak, however, a brigade (on a supporting axis or in the second echelon) can use an FSE in lieu of an advance guard. Infantry companies often perform this role, even in tank brigades. Typical reinforcements include an artillery or mortar element, and possibly an antitank platoon. A sapper element may accompany an FSE, or an MSD may be marching in the immediate vicinity. Against a weak threat, or when limited assets are available for march security, a battalion might send out only a reinforced platoon as its FSE.

The distance between the FSE and the battalion (advance guard) main body relates to the speed of movement. It also reflects the length of time the FSE can fight a possibly superior enemy force before the parent battalion arrives. These factors, in turn, relate to the type of unit involved (tank, mechanized, motorized, or dismounted infantry). For example, the OPFOR believes that time to be 20 to 30 minutes when a tank or mechanized infantry unit sends out the FSE. From the time the FSE becomes engaged, that is the time required for both the following actions:

- . For the battalion commander to estimate the situation, make his decision, and assign missions to subordinates while on the move.
- For the battalion to deploy into battle formation.

At an average rate of 25 kilometers per hour, a battalion of tracked vehicles can cover a straight-line distance of 5 to 10 km in 12 to 24 minutes. However, the battalion main body may move over a longer route to engage the enemy from a flank. Thus, the total time interval from engagement of the FSE to engagement of the battalion main body may be 20 to 30 minutes. This means that the advisable distance is 5 km for a platoon-sized FSE and up to 10 km for a company-sized FSE. For truck-mounted motorized infantry, the distance can be 4 to 7 km; for infantry on foot, it is 3 to 6 km.

Combat Reconnaissance Patrol or Forward Patrol

The CRP or forward patrol (FP) can precede the FSE company main body by 3 to 5 km. This distance precludes the enemy from being able to engage both the CRP/FP and the FSE with direct fire. It also permits the FSE to support the CRP/FP's battle using fires of reinforcing artillery and allows the FSE to engage the enemy force in an organized manner. In some cases, both a CRP and an FP may precede the FSE; then the CRP could be 3 to 5 km ahead of the FP and 6 to 10 km ahead of the FSE. Once his platoon-sized CRP and/or FP becomes engaged, a mechanized infantry company commander needs about 8 to 12 minutes to move up the rest of the company at a speed of 25 kilometers per hour. During that time, he must estimate the situation, make his decision, and assign missions to subordinates. The time and distance are about the same for truck-mounted motorized infantry. For dismounted infantry, the FSE would be no more than 1 km behind a CRP or FP.

A platoon-sized FSE may send out a single patrol squad or vehicle. In this case, the distance from the FSE must allow the parent platoon to observe the patrol and support it by fire. For a mechanized or tank unit, that distance can be 300 meters to 1 km. For dismounted infantry, it can be 300 to 600 meters.

Flank Security Element

A brigade can deploy a flank security element, usually in company strength, on a threatened flank. It can reinforce this company with antitank and minelaying assets, or have it march with an antitank reserve and an MOD. These mobile flank security elements usually march even with the head of the main body and about 5 km from the main route.

The brigade can also use stationary flank security elements, for example, to block the exit from a mountain pass while the main body passes by. At the line designated for it, the company given this mission deploys all or part of its forces into battle formation and organizes a defense. It remains at this line, protecting the flank of the main column, until a prescribed time.

Rear Security Element

The rear security element for a brigade is normally a reinforced company in strength. It follows 4 to 7 km behind the main body.

Main Body Battalions

The combat grouping of first-echelon battalions may differ between the various types of brigades. If a motorized infantry brigade has one mechanized battalion, the commander may choose to use that battalion as an advance guard; in other situations, he could place it near the front of the main body. A tank brigade often allocates a company of its mechanized infantry battalion to each of its tank battalions. In mechanized infantry brigades, the tank battalion (less any company allocated to the advance guard) remains together on the march and moves close behind the brigade main CP at the head of the column. As commitment to battle approaches, the brigade commander may split up the tank battalion's companies and allocate them to first-echelon mechanized infantry battalions, with one tank company kept under brigade control. Of course, a motorized or light infantry brigade has no organic tank battalion. Second-echelon battalions, in both tank and infantry brigades, receive little reinforcement before their commitment to battle.

The brigade main body attempts to maintain uninterrupted forward movement as a result of the actions of the march security and reconnaissance elements. It remains in a close column to help maintain the speed of the march. A brigade in the second echelon of the division main body would deploy flank and rear security and also some form of forward security (although less than an advance guard).

Artillery

A brigade's organic artillery battalion or battery, or a brigade artillery group (BrAG), if formed, may occupy varying positions in the column of march. When contact with the enemy is imminent, the artillery follows close behind the main CP at the head of the column. This arrangement is likely in anticipation of a meeting battle. On encountering the enemy, the artillery must be ready to support the CRP battle and then the successive deployment of the FSE, advance guard, and main body into the battle. In second-echelon brigades, and on other occasions when contact is unlikely, the artillery may be farther to the rear.

An infantry brigade's antitank unit may cover an exposed flank or march well forward, depending on the tactical situation. It often moves and acts in concert with an MOD.

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Air Defense

The brigade commander plans air defense for the march in advance. His plan incorporates organic and supporting air defense weapons and aviation. The commander can position air defense weapons in the column or in stationary positions occupied in advance. He normally distributes the weapons throughout the column. However, he may deploy some elements in air defense ambushes on the flanks.

When enemy aircraft are within range and threatening the column, the commander gives the signal to open fire. Simultaneously, the column speeds up and drivers increase their interval to a distance of up to 150 meters between vehicles. If a large group of aircraft attacks, the column may have to disperse or seek off-road concealment.

BATTALION TACTICAL MARCH

In the march, a reinforced infantry or tank battalion may serve as one of the following:

- The FD of a division.
- The advance guard of a brigade.
- Part of the brigade's main body.

Figure 3-10 shows the various march security elements that can appear in the march formation of a reinforced motorized infantry battalion acting as an advance guard. The advance guard's mission is to--

- Prevent an enemy surprise attack.
- Forestall penetration by enemy reconnaissance into the vicinity of the main body.
- Create favorable conditions for the deployment of the main body and its introduction into battle.

NOTE: This diagram shows some, but not all, variants of march security groupings a motorized advance guard battalion could dispatch, depending on the situation. In normal circumstances, not all of these would be present.

1. Combat reconnaissance patrol (CRP)--usually a reinforced platoon. A battalion may send out as many as three CRPs to reconnoiter flanks and alternate routes, as well as the primary route.

2. Forward patrol--a squad or platoon that provides march security ahead of the forward security element.

3. Forward security element (FSE)--a reinforced platoon or company that provides march security ahead of the advance guard main body.

4. Patrol squad--a single squad, mounted or dismounted, that either conducts reconnaissance or provides march security for the unit which dispatched it. In this example, it provides flank security or reconnaissance for the FSE. But the forward patrol could send a patrol squad forward along its route of march for additional security.

5. Flank security element--a platoon that provides march security to the flank of the main body.

6. Rear security element--a platoon that provides march security to the rear of the main body.

Figure 3-10. March security elements in advance guard battalion (example).

A division FD may move in the same type formation as an advance guard, dependent on the chance of contact with the enemy. As part of the main body, the battalion would move in a single column. The commander would be at or near the head of the battalion column.

First-echelon battalions and battalions with independent missions, such as FDs or advance guards, all tend to receive similar reinforcements. Therefore, it is difficult to determine a battalion's role from its march formation.

Forward Patrols

The most common march security patrol is the **FP**, found throughout a division's formation. FPs typically lead the FSEs of first-echelon battalions. Advance guards and FDs may deploy an FP in addition to their CRPs. Second-echelon battalions can also employ FPs. When the likelihood of contact with the enemy is low, even first-echelon battalions may use FPs instead of FSEs. FPs operate close to the FSE or battalion main body, generally 3 to 5 km ahead, traveling along the main body's actual route. These patrols may attack from the march to destroy weak enemy forces or seize high ground for the subsequent commitment of the FSE or advance guard. They do not have to avoid contact with the enemy, but normally would not attack an enemy who is stronger or in well-prepared defenses.

Flank and Rear Patrols

Battalions employ flank and rear patrols in appropriate tactical situations. Infantry or tank platoons can serve as march security patrols and may include engineer or chemical reconnaissance assets. The smallest form of patrol is the patrol vehicle or patrol squad. These may be sent ahead of platoons or companies operating independently, or even battalions deep in the main body of the division. Scout patrols frequently deploy on the open flanks of such units.

COMPANY TACTICAL MARCH

In the march, a company may serve as one of the following:
- A forward detachment for a brigade.
- A forward security element for a battalion or brigade.
- A flank or rear security element for a brigade.
- Part of the battalion main body.

In a march security role, the company march formation consists of a main body column and its own security patrols. As part of the battalion main body, it consists of a single column.

If a tank platoon reinforces an infantry company, the entire platoon marches at the head of the company column. A tank company allocated an infantry platoon may use it as a forward patrol, if the tactical situation requires one. If not, it can split the infantry platoon among the tank platoons, and individual vehicles follow the tanks of their assigned platoon.

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The OPFOR definition of **tactical reconnaissance** differs from that for operational reconnaissance only in scope. The purpose is to acquire and analyze information about the terrain, and actual or probable enemy units within a specific area, in order to prepare for and conduct combat. Districts, divisions, brigades, and battalions carry out tactical reconnaissance. However, higher levels can provide tactical intelligence support to division and brigade combat activities.

The OPFOR considers reconnaissance the most important of its combat support functions. Without an integrated reconnaissance effort, the actual actions of field commanders cannot be successful. At all levels of command, OPFOR commanders and their reconnaissance staffs devote great time and resources to all forms of reconnaissance. All these resources contribute to the identification of developing threats and enemy strengths and vulnerabilities. These resources include not only the standard, organic reconnaissance assets, but also infantry units, the militia, and the civilian populace at large.

PRINCIPLES

Seven principles, common to many armies, guide OPFOR reconnaissance efforts. OPFOR plans and execution at all levels of command reflect these general principles. Because of the close interrelation of these principles, the OPFOR strives to satisfy them simultaneously and continuously.

Focus

The OPFOR integrates its reconnaissance assets into a coordinated effort that utilizes these limited assets to their maximum potential. This effort, above all else, must satisfy the commander's intelligence requirements. Missions must focus on specific objectives. Reconnaissance staffs develop comprehensive plans, focusing on the commander's stated requirements. The staffs task their organic assets to fulfill these requirements, based on their capabilities. The reconnaissance staff requests support from higher headquarters to fulfill requirements that are beyond the capabilities of organic assets. Reconnaissance plans focus the reconnaissance assets on the most critical areas of the battlefield. For example, reconnaissance troops may coordinate with militia forces or civilians located in the area to provide point observation along less probable avenues of approach. This allows the standard reconnaissance forces to focus their efforts on the most probable avenues of approach.

Continuity

Continuous reconnaissance allows uninterrupted coverage of the enemy situation and prevents surprise. OPFOR reconnaissance units attempt to maintain contact with the enemy at all times. Ideally, this is 24-hour-a-day coverage in all weather conditions, whether the given sector or zone is active or quiet. To ensure this continuity, the OPFOR attempts to provide overlapping coverage using a wide variety of resources, ranging from fixed- and rotary-wing Air Force assets to the civilian populace.

The OPFOR conducts reconnaissance in all directions, including the flanks and rear, in order to prevent surprise. Not only must reconnaissance answer specific requests for information, but it must continuously collect information on all aspects of the enemy, weather, and terrain to meet future requirements. Commanders at all levels are responsible for organizing continuous reconnaissance. Reconnaissance is a combat mission, not solely the responsibility of reconnaissance troops.

Aggressiveness

Aggressiveness is the active, vigorous search for information. Commanders and reconnaissance staffs use all means at their disposal to gain information using their organic capabilities. By their very nature, reconnaissance missions demand initiative, daring, and flexibility to be successful. Although reconnaissance through observation is the primary technique for gaining information, certain missions may include combat actions, such as raids and ambushes. Therefore, commanders and reconnaissance staffs must constantly weigh the importance of the information against the potential loss of their reconnaissance assets.

Reliability and Accuracy

Commanders base their decisions on reconnaissance information. Therefore, it must portray the true enemy situation. They also understand that the enemy may have a strong counterreconnaissance effort to deny them information. This enemy effort includes deception, concealment, and the physical destruction of OPFOR reconnaissance assets. Reconnaissance planners attempt to ensure redundant acquisition means, especially on the main axis. This allows them to overcome enemy counterreconnaissance, deception, and concealment by comparing and cross-checking the reports from various sources.

In addition to the basic reliability of the source, the soldiers in the reconnaissance units must report the collected information accurately and completely. For this reason, commanders normally assign the best soldiers within infantry units to support reconnaissance units. The OPFOR uses all available reconnaissance means to verify the accuracy of reported information. The OPFOR also strives for accuracy through the creation of overlapping coverage and improved technology.

Timeliness

Timely battlefield information is critical. Due to the high tempo of the modern battlefield, information quickly becomes outdated. Timely reporting allows the commander to make adjustments to his plan, exploit vulnerabilities, and gain the initiative. Although newer reconnaissance systems aid in achieving greater timeliness, maneuver commanders still gain most of their information from ground reconnaissance and troop units.

Secrecy

Concealment of reconnaissance consists of keeping all reconnaissance measures secret and misleading the enemy regarding the disposition and actions of friendly forces. The OPFOR achieves this by--
- Restricting the number of persons engaged in planning reconnaissance.
- Conducting reconnaissance across a broad frontage.
- Concealing the actions of reconnaissance units.
- Applying cover and concealment measures to reconnaissance forces and assets.

OPFOR commanders are aware that their reconnaissance actions may reveal their intentions to the enemy. Therefore, they attempt to disguise the scale, patterns, and focus of reconnaissance efforts along given axes or against specific objectives. They apply deceptive measures to the reconnaissance actions to mislead, conceal, or exaggerate the effort. Their primary goal is not to reveal where the OPFOR is concentrating its main strength.

COMMAND AND CONTROL

In battalions, the chief of staff is responsible for planning and organizing reconnaissance, based on the commander's guidance. The chief of staff has overall responsibility for providing the necessary information for the commander to make decisions. The chief of staff has a more clearly defined role in structuring the reconnaissance effort at this level than at higher levels.

Chief of Reconnaissance

In district, division, and brigade headquarters, the chief of reconnaissance (COR) is responsible for organizing reconnaissance in accordance with the commanders' plan. The COR also serves as the chief of intelligence. As such, he heads the intelligence section. He is part of an intelligence chain that originates at the national level. His intelligence efforts fit into an overall intelligence plan. At the district, division, and brigade level, the COR works for and reports to the chief of staff.

During combat, the COR directs the efforts of subordinate intelligence sections and reconnaissance units. His specific responsibilities are--

- Collecting and analyzing information on the enemy, terrain, and weather.
- Disseminating analyzed information to the commander and adjacent units.

- Developing requirements-based collection, reconnaissance, and surveillance plans.
- Organizing reconnaissance missions to include requests for aerial reconnaissance.
- Preparing the intelligence portion of combat orders.
- Preparing periodic intelligence reports and briefings.
- Exploiting documents and materiel.
- Interrogating prisoners of war.

Zones of Reconnaissance Responsibility

Each OPFOR headquarters, from district to battalion, has a zone of reconnaissance responsibility, subdivided into three parts. The width of the zones of reconnaissance responsibility broadly equates to the unit's frontage. The zones of reconnaissance are a detailed reconnaissance zone, general reconnaissance zone, and rear reconnaissance zone.

Detailed Reconnaissance Zone

Within the detailed reconnaissance zone, reconnaissance forces conduct detailed, thorough, time-consuming reconnaissance of all terrain from the forward edge to the maximum, effective range of the unit's organic weapons.

General Reconnaissance Zone

Within the general reconnaissance zone, the headquarters must be able to monitor sufficient enemy activity in order to confirm or deny the staff estimate of the enemy actions. The OPFOR does not want its plans disrupted by unexpected enemy moves. The general reconnaissance zone may overlap into the zones of flanking elements.

Rear Reconnaissance Zone

The rear reconnaissance zone is the maneuver unit's rear area. Within its own rear area, the headquarters must be able to monitor enemy activity, particularly the use of chemical strikes or airmobile forces.

Communications

Districts, divisions and brigades organize specific radio nets to link reconnaissance subordinate units with the headquarters. Battalions monitor the brigade net, especially when acting independently of the main body, but do not usually maintain a specific reconnaissance net.

Reserves

The OPFOR expects commanders at brigade and above retain a reconnaissance reserve to respond to unforeseen taskings or reinitiate efforts on failed key missions. At the tactical level, commanders may use infantry units for the initial reconnaissance and keep the trained reconnaissance troops for the refinement of initial efforts. Upon commitment of the trained reconnaissance troops, the commander immediately reforms his reconnaissance reserve from regular forces.

SUPPORT FROM HIGHER COMMANDS

The OPFOR district and division commander's reconnaissance assets are not adequate to cover their entire area of responsibility. As a result, higher command support is vital to the performance of their missions. Much of the tactical reconnaissance capability comes from the region's, or army's resources. Its application is roughly the same.

Directorate of Military Intelligence

The Directorate of Military Intelligence, subordinate to the General Staff, has three subcomponents that can directly support the tactical level:
- An operations battalion.
- Signals reconnaissance battalions.
- Reconnaissance and electronic combat (EC) battalions.

Although normally associated with strategic and operational reconnaissance, the directorate may allocate complete battalions or portions of these battalions to districts and divisions.

Operations Battalion

The operations battalion provides a human intelligence capability. Functions of the operations battalion include special information (propaganda), counterintelligence, and interrogation. In both the offense and defense, the directorate may attach teams, in a habitual relationship, to first-echelon districts and divisions for more timely exploitation of captured personnel and materiel.

The collection priorities of the operations battalion in the **offense** include--
- Location, size, composition, and direction of enemy force movement.
- Enemy objectives.
- Enemy weaknesses and vulnerabilities.
- Locations of engineer work.

The priorities of the operations battalion in the **defense** include--
- Location, types, and disposition of enemy forces, including reserves.
- Enemy unit objectives.
- Location of the enemy's main attack.
- Enemy weaknesses and vulnerabilities.
- Enemy tactics and intentions, to include use of NBC weapons.

Signals Reconnaissance Battalions

Signals reconnaissance battalions provide the majority of the ground radio reconnaissance, radar reconnaissance and direction finding (DF) capabilities of the OPFOR. Regions or the expeditionary army receiving signals reconnaissance battalions either retain control at that level of command or allocate them to subordinate districts or divisions. If the regions or army retain control, the signals reconnaissance battalions can provide intelligence support through the COR and the intelligence sections to the tactical commanders.

In the **offense**, the battalion's assets locate with the division conducting the main attack. The reconnaissance staffs at the division and higher commands coordinate to ensure continuous coverage of the most critical sectors of the battlefield. The CORs select alternate positions that provide line-of-sight (LOS) along the avenue of approach. This enables the assets to leapfrog forward to support the operation.

Radio intercept priorities include--
- Reconnaissance command and control (C^2) nets.
- Tank communications and maneuver force C^2 nets.
- Artillery, fire support, air defense, NBC, and engineer nets.
- Radio jammers.

Radar intercept priorities include--
- Surveillance and air defense radars.
- Countermortar and counterbattery radars.
- Radar jammers.

DF priorities are to locate the sources of both radio and radar intercepts.

In the **defense**, the battalion coordinates positioning of its assets with the COR. Assets may locate in the portion of the security zone forward of the division expecting the main attack. The position of these assets depends on the terrain and disposition of friendly forces in the security zone. Ideally, assets position behind those forces in their initial positions. As security echelon forces fall back to their successive positions, signals reconnaissance assets fall back to previously reconnoitered positions offering good LOS. If deployed within the main defenses, assets position behind the first-echelon battalions of the first-echelon brigades. They locate on terrain offering good LOS and reposition frequently, even within the main defenses, to avoid enemy electronic warfare activities and subsequent destructive fires. Priorities in the defense are the same as in the offense.

Reconnaissance and Electronic Combat Battalions

The organization of EC battalions is similar at all levels of command. These battalions contain--
- Two ground reconnaissance companies.
- One long-range reconnaissance company.
- One radio and radar reconnaissance company (radio and radar intercept and DF capability).
- One reconnaissance and EC company (radio jamming capability).

At army and higher, each battalion also has an organic remotely-piloted vehicle (RPV) squadron. The directorate equips its battalions with the newest equipment and transfers the older equipment to battalions at the lower levels of command. The directorate may allocate most of its battalions to military regions and the army during wartime. The army or regions may further allocate the battalions down to districts and divisions. See the Division or District Assets section later in this chapter for usage at the tactical level.

Commando Battalion

The State originally organized commando battalions to combat insurgency within its borders. Commando battalions are normally subordinate to the Special Operations Command. However, some may be subordinate to military districts with long-term or recurring insurgency problems. As their secondary mission, all commandos train to conduct reconnaissance. Commandos normally conduct reconnaissance within the context of other missions, such as a raid. If the State assigns the commandos a pure reconnaissance mission, they form a reconnaissance detachment or group. Their structure and composition do not support employment as a standard reconnaissance patrol.

Militia and Civilians

In the defense, militia forces or civilians, located in or near villages or towns, are a source of general reconnaissance information. Normally, their reconnaissance role is not an active one. Frequent visits to local villages by OPFOR forces can sometimes yield fairly accurate and timely information on enemy forces in the area. This is especially effective if the enemy forces are oppressive to the local population. As a rule, however, reporting is not timely, and the reliability of the information varies widely. Standard reconnaissance forces, however, may request point observation coverage in or near the village or town, particularly in less threatened sectors or less likely enemy avenues of approach. This allows the standard reconnaissance forces to focus on the most probable avenues of approach.

Chemical Reconnaissance

Chemical defense battalions at the national level include one chemical reconnaissance company. (See the *Light OPFOR Organization Guide* for organization.) National level may allocate one chemical reconnaissance company to a military district. Employment of the squads from

this company is the same as for those organic to the division, discussed later.

Air Reconnaissance

Districts and divisions do not have their own helicopter or fixed-wing assets. Higher levels provide this support. Engineers and chemical defense troops frequently use helicopters from national level to assess routes and obstacles and areas of contamination behind the forward edge. Generally, this does not occur within enemy airspace, though opportunities may arise in a highly fluid battle. Attack helicopters and fixed-wing aircraft submit normal intelligence reports during their missions. National level has dedicated reconnaissance helicopters and fixed-wing aircraft that conduct visual, thermal imaging, photographic and infrared reconnaissance, as well as radio intercept and direction finding. (See Chapter 9 for the procedures to request air reconnaissance.)

PRIORITIES

Reconnaissance priorities must support the information requirements of the commander. Therefore, priorities vary at different levels of command. (See the following paragraphs for general tactical reconnaissance priorities.) Reconnaissance information is especially important with OPFOR emphasis on the conduct of continuous combat. The OPFOR emphasizes to commanders that it is necessary to locate 75 to 80 percent of possible targets before launching an attack with a reasonable chance of success. Commanders attempt to locate 100 percent of the highest priority targets such as high-precision weapons and command posts. This degree of target location demands a high level of skill from all levels of reconnaissance troops. The OPFOR tasks its reconnaissance elements to acquire the following types of data:

Enemy Forces

The composition, capabilities, location and intentions of the enemy are vital information to the OPFOR commander. The location and readiness of high-precision weapons of mass destruction are the highest priority. Headquarters, communication centers, defended areas, and artillery positions are also important. District, division, and brigade commanders also task reconnaissance to locate enemy reserves, assembly areas, and second echelons. Reconnaissance makes every effort to find boundaries and open flanks suitable for attack.

In addition to higher command-level reconnaissance priorities, tactical reconnaissance tries to fulfill local, more specific threats. General tactical reconnaissance priorities include the location and disposition of--

- Artillery, weapons of mass destruction delivery systems, and their associated radars.
- Tanks, all types of infantry, and anti-tank systems.
- Attack helicopters and helicopter forward area resupply points.
- Division, brigade, and battalion command posts, logistics facilities, and lines of communication.
- Engineers and electronic warfare assets.
- Avenues of approach and mine fields.

In the **defense**, priorities include identification of the enemy's main effort and the location of his second echelon or reserves. In the **offense**, priorities include the nature and extent of obstacles, both natural and manmade, and the placement and degree of defensive position preparation.

Terrain

The OPFOR devotes much of its reconnaissance effort to finding good routes for maneuver units through difficult terrain. The identification of lateral routes, vital ground, and possible sites for communications equipment and assembly areas is also important. If the advance is to continue, it is essential that the commander has timely information on the nature and extent of obstacles. Especially important in this context are possible sites for crossing water obstacles and assessments of enemy demolitions and minefields.

Reconnaissance has to locate areas of contamination, resulting from both enemy and OPFOR strikes. Reconnaissance also provides information to evaluate the degree of hazard involved in crossing them.

DISTRICT OR DIVISION ASSETS

The OPFOR employs chemical, artillery, engineer, medical, RPV, and radio and radar intercept and direction-finding units to gather tactical reconnaissance information.

Reconnaissance and Electronic Combat Battalions

Districts may and divisions do have reconnaissance and EC battalions organic. (See Chapter 13 for a more thorough discussion of EC.) Each reconnaissance and EC battalion includes--

- Two reconnaissance companies.
- One long-range reconnaissance company.
- One radio and radar reconnaissance company (intercept and DF capability).
- One jamming company.
- Possibly an RPV squadron.

Whether organic or allocated, the use of the reconnaissance and EC battalions is identical. If organic to the division, the battalions may or may not contain an RPV squadron; battalions allocated from the expeditionary army would contain the RPV squadron. Positioning and mission priorities for intercept, DF, and jamming assets are the same as for those in signals reconnaissance battalions. The only difference is that assets focus on enemy forces at brigade level and below.

The district and division CORs plan RPV missions. Flight profiles vary according to the mission. (See Chapter 9, Air Support, for flight profiles.) The RPV acquires priority point and area targets during these missions. The operator immediately transmits the target locations directly via secure radio communications to the artillery command and observation post (COP) colocated in the command center. As a rule, only general target location (within 1 to 2 km) is possible. Occasionally, however, the RPV location, combined with terrain and map association, can make it possible to determine target location to within 100 meters, or less.

Offense

In the **offense**, the battalion's ground reconnaissance assets can enter the division sector as late as 24 hours before to the main attack to conduct a general reconnaissance. The ground assets concentrate on the route, obstacles, battle positions, antitank systems, armor forces, and significant counterreconnaissance assets on the division's main axes of attack. The long-range reconnaissance company can deploy in small teams at distances up to 100 km in advance of the division. The command inserts these teams by helicopter, parachute, vehicle, or on foot. They establish observation posts on dominant terrain, and concentrate their reconnaissance along the division's primary axes of advance. Their reports

allow the division- and brigade-level ground reconnaissance forces to refocus their efforts, as required. The reconnaissance companies normally reconnoiter at distances of 40 to 50 km ahead of the division main body in patrols of three to four vehicles each. The depth to which all of these reconnaissance assets deploy depends on several factors:

- The commander's intelligence requirements.
- The location of the parent organization's initial and subsequent missions.
- The base organization of the overall force. (Predominantly light infantry forces have much shallower depths than motorized or mechanized forces.)
- The insertion method of the long-range reconnaissance company.
- The amount of time needed to conduct the reconnaissance, prior to the arrival of the maneuver forces.

Defense

In the **defense**, ground reconnaissance assets deploy throughout the depth of the security zone and in some cases, in front of the security zone. The long-range reconnaissance company reconnoiters at distances up to 100 km in front of the division. The two reconnaissance companies may deploy as companies, forming a reconnaissance detachment, or as platoon-sized reconnaissance patrols. The reconnaissance companies can reconnoiter across the divisional frontage and to a depth of up to 50 km. The division's reconnaissance patrols focus on enemy axes of advance, in the area between the long-range reconnaissance company and the brigade reconnaissance organizations. The size and vehicle mix of each patrol depends on the terrain, enemy strength, and the importance of the axis. Figure 4-1 illustrates the employment of division and brigade tactical ground reconnaissance assets against a partially prepared defense.

Up to 100 km	Up to 50 km	25-30 km	

X

DIVISION MAIN BODY

Division Long-Range Recon Company (dismounted teams)	Division Recon Company (x2) To depth of enemy division rear (division subsequent mission)	Brigade Recon Platoon To depth of enemy 2nd-echelon or reserve brigade (brigade subsequent mission)	Patrol of BRDM-2s Dismounted Patrol
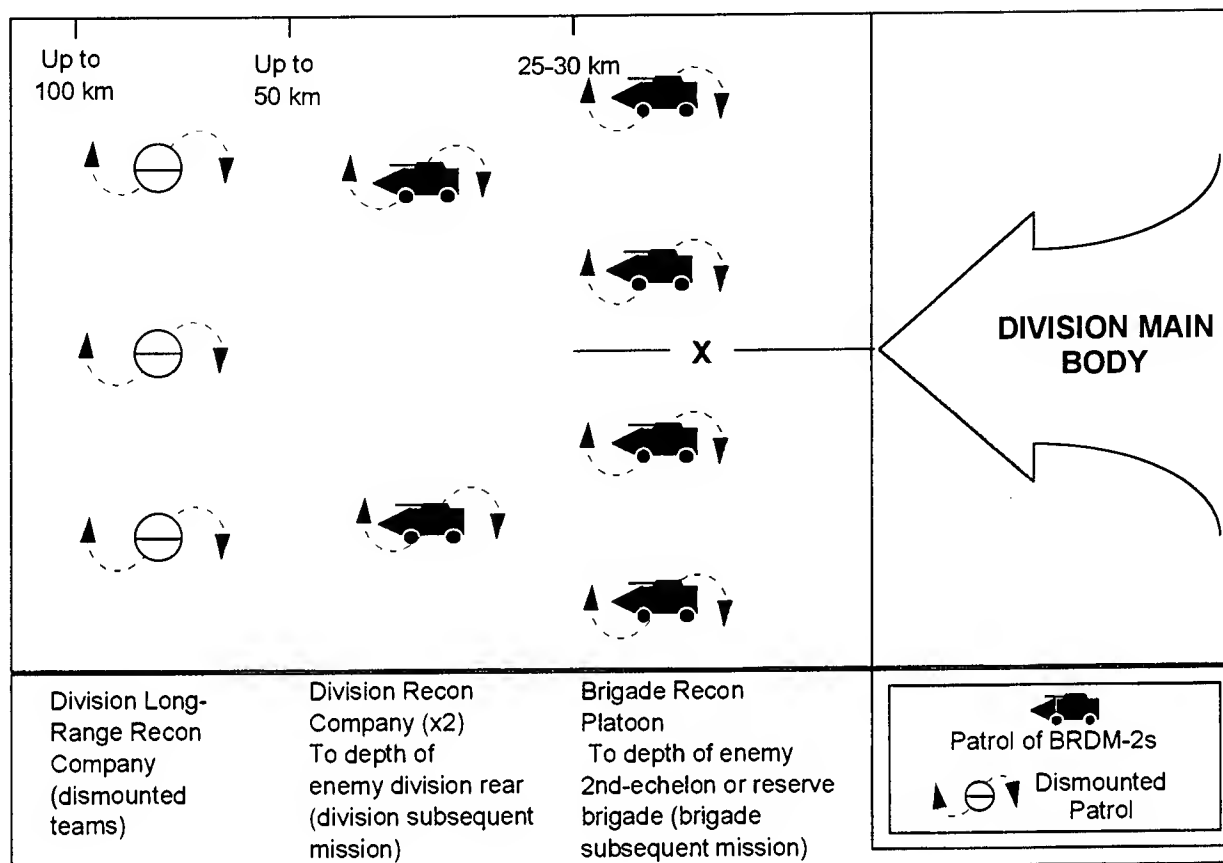
Figure 4-1. Employment of tactical reconnaissance assets (against partially prepared defense).

Commando Battalion

Military districts may have a commando battalion organic. The battalion's primary mission is counterinsurgency within the territorial boundaries of the district. However, reconnaissance reporting is a standard requirement, based on a standing set of intelligence requirements. The battalion or some of its subordinate units can conduct special reconnaissance or direct-action missions. If used in this role, they deploy in squad to platoon-sized teams within the security zone. Their availability for special missions depends on the degree of insurgency activity within the district.

Artillery Reconnaissance

Divisions normally have organic artillery regiments. So do some military districts. The standard artillery regiment has a target acquisition battery, equipped with three battlefield surveillance radars and a countermortar/counterbattery radar. Each of the regiment's howitzer battalions also has one battlefield surveillance radar. These assets can provide critical and timely radar location information to the planners, targeteers, and analysts.

Chemical Reconnaissance

Divisions normally have a chemical defense company that includes one chemical reconnaissance platoon. (See Chapter 14 for more detail.) Chemical reconnaissance personnel assigned to the squads of that platoon performs chemical reconnaissance. Chemical reconnaissance involves two general types of activity: patrolling and establishing chemical observation posts.

Patrols

When deploying as chemical reconnaissance patrols, personnel travel in reconnaissance vehicles especially equipped with NBC detection and warning devices. Their role is to identify and mark areas of contamination and find routes around the contamination. They may also find the shortest route through it, and select certain areas for decontamination. The reconnaissance assets of chemical defense units can reconnoiter a large contaminated area or divide into squads. Squads attached to combat units perform reconnaissance on multiple routes.

Individual chemical reconnaissance specialists, or groups of two to three, may accompany other types of ground reconnaissance patrols. In that case, they travel in the patrol's vehicles or move on foot with dismounted patrols.

Chemical Observation Posts

A chemical observation post normally consists of three or four observers located near the command post of a combat unit. Although normally staffed with chemical defense specialists, trained combat troops can man chemical observation posts. During movement, the chemical observation post moves in its own vehicle close to the combat unit commander.

The functions of the chemical observation posts are to--
- Detect NBC contamination.
- Determine radiation levels and types of toxic substances.
- Monitor the drift of radioactive clouds.
- Notify higher headquarters of NBC information, as well as meteorological data.
- Give the general alarm to threatened troops.

Engineer Reconnaissance

Some military districts and all mechanized infantry divisions normally have an engineer battalion. Each battalion has one engineer reconnaissance platoon. The platoon may attach individual specialists to standard reconnaissance or security forces forward of the main forces, in both offense and defense. Engineer reconnaissance specialists may also establish observation posts. Motorized infantry and infantry divisions have only a company of engineers without trained engineer reconnaissance troops. Although the highest level of engineer training and the best engineer capabilities exist in engineer troops, all OPFOR troops train to some degree in fundamental tasks, including engineer reconnaissance. Therefore, if engineer reconnaissance troops are not available, standard infantry troops can conduct basic engineer reconnaissance. (See Chapter 11 for more detail on engineer reconnaissance organizations and their deployment.)

Engineer reconnaissance elements collect engineer data on the enemy's engineer posture and the condition of the terrain. Means of collecting information include observation, ground and aerial photography, and exploitation of documents, prisoners, and local residents.

If available, engineers participate in all reconnaissance patrols of maneuver units. Dismounted reconnaissance patrols include engineers whenever a bridge or obstacle is the object of the reconnaissance mission. On the **march**, the primary goal is to provide detailed information on the passability of routes. In the **offense**, reconnaissance attempts to obtain information on the nature of enemy fortifications and defensive positions, as well as the composition and types of equipment and obstacles of the enemy. In the **defense**, engineer reconnaissance elements observe enemy preparations for the attack and determine the character and extent of enemy engineer activity.

RECONNAISSANCE FORMATIONS

OPFOR commanders and their staffs use a variety of assets and formations to conduct ground reconnaissance. Standard ground reconnaissance units commonly use most of these formations and they are applicable to any infantry force that the commander or staff designates to conduct the mission. The basic reconnaissance formations are detachments, groups, and patrols.

Reconnaissance Detachments

A reconnaissance detachment is the largest organized reconnaissance force. Districts, divisions, or higher commands may form reconnaissance detachments. This is a reinforced company- or battalion-sized formation. It uses a light, motorized, or mechanized infantry company or battalion as a base. The commander may augment the base battalion with--

- A tank platoon or company.
- An artillery or mortar battery.
- A combat engineer platoon.
- Chemical defense specialists.

A company-sized reconnaissance detachment might receive only a tank platoon and smaller complements of artillery, engineer, and chemical

defense assets. The most common conditions for forming a detachment are--

- A lack of standard reconnaissance assets at a given level of command.
- The commander's desire to hold his trained reconnaissance forces in reserve and use regular infantry for the initial reconnaissance.

In the **offense**, the detachment deploys along the axes designated for the main attack. The reconnaissance detachment dispatches platoon-sized patrols to reconnoiter specific objectives along the routes. The detachment's primary mission is to gather information on--

- The enemy's main defensive locations.
- Unit positioning.
- Force composition (particularly antitank assets).
- Gaps in the defense.
- Unit boundaries.

Upon discovery of gaps that the reconnaissance detachment can exploit, it establishes a series of observation posts to keep the main defense under surveillance. Other reconnaissance elements continue into the depth of the defense, focusing their reconnaissance on locating the enemy reserve, artillery positions, C^2 facilities, and logistics facilities. Except in highly compartmentalized terrain, platoons of each company attempt to move so as to be mutually supportive of each other. If the patrols discover a weak or unprotected enemy unit, they attempt to defeat it. If the patrols discover enemy reconnaissance, they attempt to defeat it, either by reconsolidating into a company to achieve numerical superiority, or by calling for artillery. Observation is the detachment's primary method of gathering information. The above examples are exceptions to this method. A reconnaissance detachment may also conduct raids. The detachment does not return to its parent organization prior to the OPFOR attack, but continues to relay information.

In the **defense**, the detachment normally locate forward of the security zone to determine the enemy's strength and main axes of attack. If formed due to a lack of ground reconnaissance assets, it would perform standard reconnaissance missions in the security zone. The detachment does not return to its parent organization prior to the enemy attack.

Reconnaissance Groups

Reconnaissance groups are company-sized formations, typically formed around a light, motorized, or mechanized infantry company. They may also use a commando company as a base. Groups may originate at region or army level, but are more commonly formed at district and division level. Reconnaissance groups support the **offense**. Apart from its size, the major difference between a detachment and a group is that the group's missions are against deeper, more specific targets. Its missions are normally behind enemy lines. Primary targets include command posts, airfields, troop concentrations, and troop movements (particularly enemy reserves). The group infiltrates by foot or vehicle, or is inserted by helicopter. When infiltrating on foot or by vehicle, the group moves in platoon- or squad-sized formations. The group conducts reconnaissance through observation and by more active methods, such as ambush, raid, and direct attack. Reconnaissance groups do not normally return to their parent unit prior to the OPFOR attack. They usually maintain observation and continue to report on the assigned critical targets. If their mission included destruction of the target, they may return, if able to exfiltrate by foot or vehicle.

Reconnaissance Patrols

At the district and division level the term reconnaissance patrol encompasses several very specific types of patrols. They are--

- Independent reconnaissance patrols.
- Commander's reconnaissance.
- Officer reconnaissance patrol.
- Engineer reconnaissance patrols.
- Chemical reconnaissance patrols.

Figure 4-2 illustrates the march formation of a typical patrol.

Independent Reconnaissance Patrols

Independent reconnaissance patrols are platoon-sized formations, which use light, motorized, or mechanized infantry platoons as a base. Independent reconnaissance patrols are primarily an offensive formation. Commandos may be the base if ambushes or raids are an integral part of the patrol's mission. Reinforcements may include engineer or chemical reconnaissance vehicles, or individual specialists. Brigades, districts and divisions may form these patrols. Normally the commander employs such a patrol when he has a very specific information requirement regarding the enemy or the terrain. It moves along a specific axis to achieve a single objective. It deploys to much greater depths than other platoon-sized patrols, often equal to the depths of district or divisional reconnaissance. Observation is the preferred method of reconnaissance, but ambushes and raids may be integral to the success of its mission. The mission is a temporary one, but its depth may preclude the patrol's return to its parent organization prior to the attack.

NOTES:

1. This formation applies to any form of patrol, whether RP, IRP, or CRP.

2. Engineer and chemical reconnaissance elements are not found in all patrols. If attached to patrols, they may take the form of 2-3 soldiers traveling in the patrol's own vehicles.

3. The patrol squad vehicle moves 300-1000 meters ahead of the platoon commander's vehicle. This distance is 300-600 meters for dismounted infantry. The exact distance depends on visibility at the time.

4. When contact with the enemy is unlikely, the patrol moves at its best possible speed and may use roads.

5. When contact with the enemy is likely, reconnaissance patrols of all types move off roads and by tactical bounds. The patrol occupies a good observation position, from which the platoon leader can see the axis to be reconnoitered. The patrol squad bounds forward to another good observation position, while the remainder of the patrol observes its progress. The main body of the patrol then joins the patrol squad, and the process repeats.

6. In the event of unexpected contact with the enemy, patrols try to withdraw, break contact, and then reach a position from which to identify and report the strength, composition, and location of the enemy. If this is not possible, the patrol attacks the enemy, defeats him, and resumes its mission.

7. When the patrol suspects the presence of the enemy, but the enemy refuses to reveal himself, the patrol squad may try to trick the enemy into opening fire.

RP   = reconnaissance patrol
IRP = independent reconnaissance patrol
CRP = combat reconnaissance patrol

Figure 4-2. March formation of patrol.

Commander's Reconnaissance

Commanders at battalion and higher levels of command may attend the senior commander's ground reconnaissance and conduct their own reconnaissance with their subordinate commanders as part of the planning process. The commander takes his subordinate maneuver and fire support commanders to the field site to fine tune and coordinate his battle plan. Upon determining that his plan needs modification, the commander gives verbal orders for this modification. The OPFOR takes elaborate measures to disguise the conduct and ranks of the participants.

Officer Reconnaissance Patrols

Battalions and higher conduct officer reconnaissance patrols. The commander deploys an officer reconnaissance patrol when there has been an abrupt, unexpected change in the situation. He assigns one to three of his officers to the patrol and may assign three to five soldiers for security. The purpose of the officer reconnaissance patrol is to accomplish the following:

- Update information of the enemy and terrain in the battle area.
- Determine the position of one's own and adjacent troops.
- Check contradictory situation data.

The officer reconnaissance patrol allows the OPFOR commander to oversee and maintain tight control over the maneuver force. These patrols usually do not go outside the area under the immediate control of that commander's unit.

Engineer Reconnaissance Patrols

District and division engineer reconnaissance patrols consist of a squad or a platoon of engineers tasked to obtain engineer intelligence on the enemy and terrain. In enemy territory, it deploys jointly with another ground reconnaissance element. It can also include one or two chemical reconnaissance specialists. If engineer reconnaissance troops are unavailable, engineers of other disciplines can participate in the reconnaissance patrol. (See Chapter 11 for more detail on engineer reconnaissance organizations and their deployment.)

Chemical Reconnaissance Patrols

The chemical reconnaissance patrol determines the extent and nature of any contamination. At division level, these patrols come from the chemical reconnaissance platoon of the chemical defense company. They may operate independently or as part of other maneuver and reconnaissance patrols. The chemical reconnaissance patrol is normally squad-sized with one chemical reconnaissance vehicle. (See Chapter 14 for more detail.)

RECONNAISSANCE DURING PHASES OF BATTLE

The conduct of reconnaissance varies according to the phase of the battle. Reconnaissance may support a parent organization in its advance to contact (in a meeting battle or attack from the march) or in its attack against a defending enemy. Other circumstances may dictate the use of reconnaissance by combat. Reconnaissance missions continue as the attacking force moves into the enemy depth. If the OPFOR adopts a defense, reconnaissance plays yet another role.

March and Meeting Battle

When marching to contact and penetrating an enemy covering force, an OPFOR division covers its frontage with patrols; each patrol covering a sector of 2 to 3 km. A reconnaissance detachment may advance on the main axis, with the remainder of the frontage covered by reconnaissance patrols. These patrols normally deploy from 25 to 50 km in front of the main body of the first-echelon brigade. The reconnaissance elements avoid combat and move to locate the main body of the enemy force. In a meeting battle, some patrols stay in contact with the leading enemy units as they approach the OPFOR formation, while other patrols attempt to penetrate the enemy main body. Figure 4-3 illustrates the conduct of reconnaissance in the march. Figure 4-6 contains the key to the symbols used in this chapter.
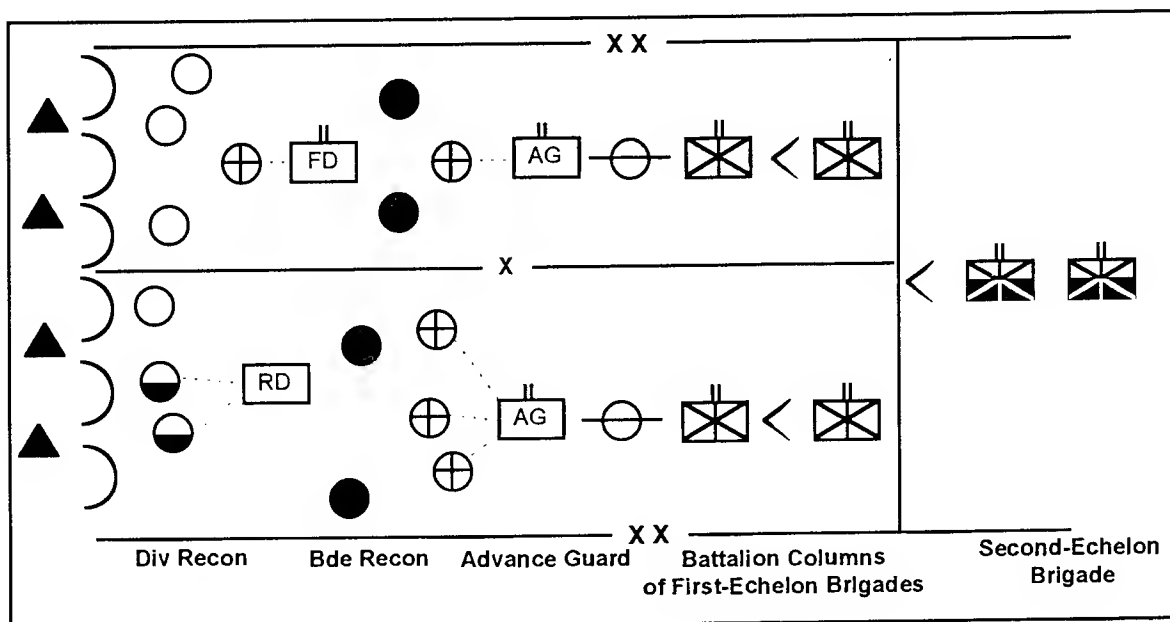
Figure 4-3. Reconnaissance in the march (example).

If the enemy is preparing to hold a main defensive position, some patrols establish a line of static observation posts reporting on enemy defenses. Other patrols attempt to find gaps or open flanks in enemy positions. The OPFOR also deploys reconnaissance patrols on the flanks of the division. The proximity of friendly formations determines the number of these patrols.

First-echelon brigades deploy their reconnaissance patrols behind the divisional patrols. Brigade reconnaissance is normally 25 to 30 km in front of the brigade main body, but in any case, approximately an hour in front of the advance guard. In extreme cases, however, a particular brigade could push its patrols out as far as 40 to 45 km ahead on its march route. The advance guard battalions of these leading brigades, along with any forward detachments, deploy combat reconnaissance patrols and their own reconnaissance patrols. Battalions in the main body of first-echelon brigades can deploy forward patrols, but do not employ combat reconnaissance patrols

unless they are about to make contact the enemy. In second-echelon or reserve brigades, the commander probably only uses patrol squads.

Attack Against Defending Enemy

Observation posts at the forward edge acquire much of the division's reconnaissance information. The OPFOR fully deploys its radar, direction-finding, and artillery reconnaissance assets. Figure 4-4 illustrates the conduct of reconnaissance against a defending enemy. The division reconnaissance and EC battalion and first-echelon brigades' reconnaissance patrols try to find gaps in the enemy's defense through which other reconnaissance patrols can infiltrate. Reconnaissance or dismounted motorized infantry units conduct raids to identify enemy units. By this time, the OPFOR may have inserted a large proportion of the divisional long-range reconnaissance company into the depth of the enemy defenses.
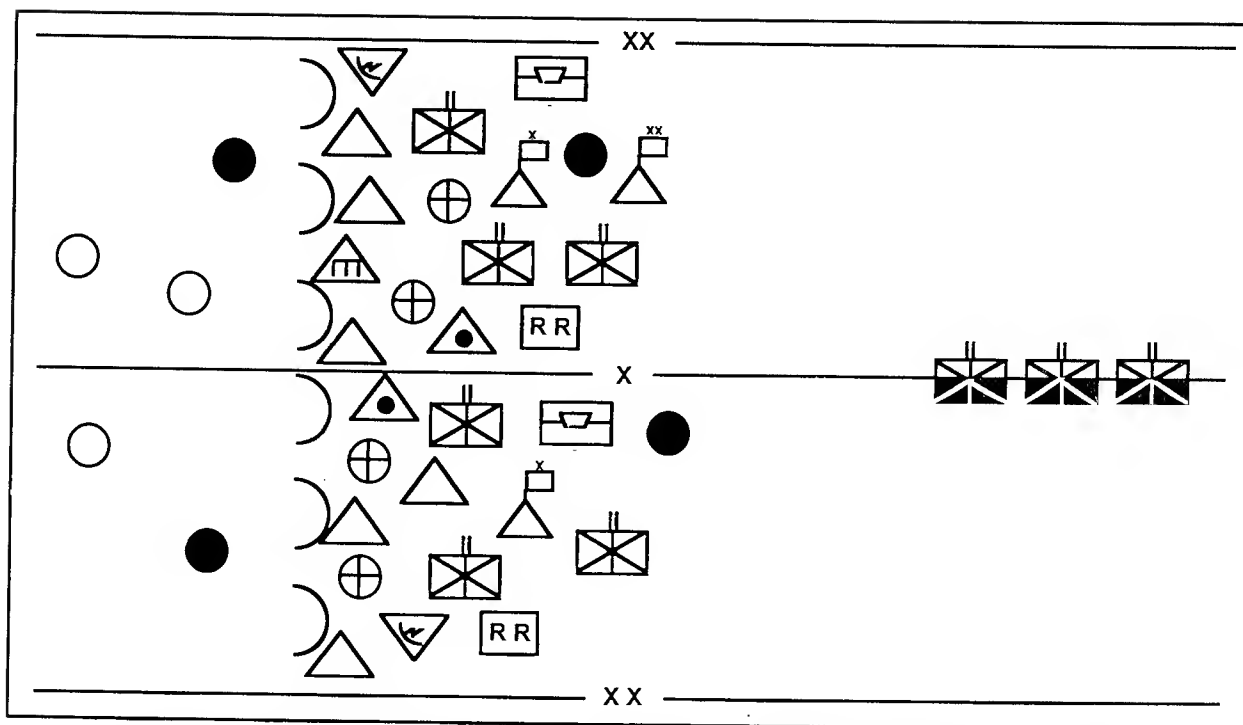
Figure 4-4. Reconnaissance in the attack against a defending enemy (example).

Deep Battle

Once the attack begins, various reconnaissance elements stand ready to deploy into the depths of the enemy's defenses. In preparation, they deploy immediately behind the assaulting troops. First-echelon battalions place combat reconnaissance patrols immediately behind their first-echelon companies. They commit these patrols when the first-echelon companies overcome the enemy's forward company positions. Brigade- and division-level reconnaissance patrols, and possibly a division-level reconnaissance detachment, are ready for insertion when the first-echelon battalions create gaps for them. Artillery strikes and smoke screens cover their commitment. When exploiting a penetration, brigades and battalions advance with open flanks, using additional brigade reconnaissance, scout patrols, or combat reconnaissance patrols to cover these flanks. Figure 4-5 shows an example of reconnaissance during this phase.

Defense

In the defense, division reconnaissance focuses on the security zone. There is considerable emphasis on the use of static observation posts. When assuming the defense out of contact with the enemy, the OPFOR may push a reconnaissance detachment or reconnaissance patrols well forward. If the division withdraws to occupy its defensive positions, some elements of the long-range reconnaissance company may remain as stay-behind parties. If the division goes over to the defensive out of contact with the enemy, the commander may deploy a reconnaissance detachment to establish contact with the attacking enemy and monitor his approach. Second-echelon brigades or reserves can also deploy assets into the intervals between defensive positions.
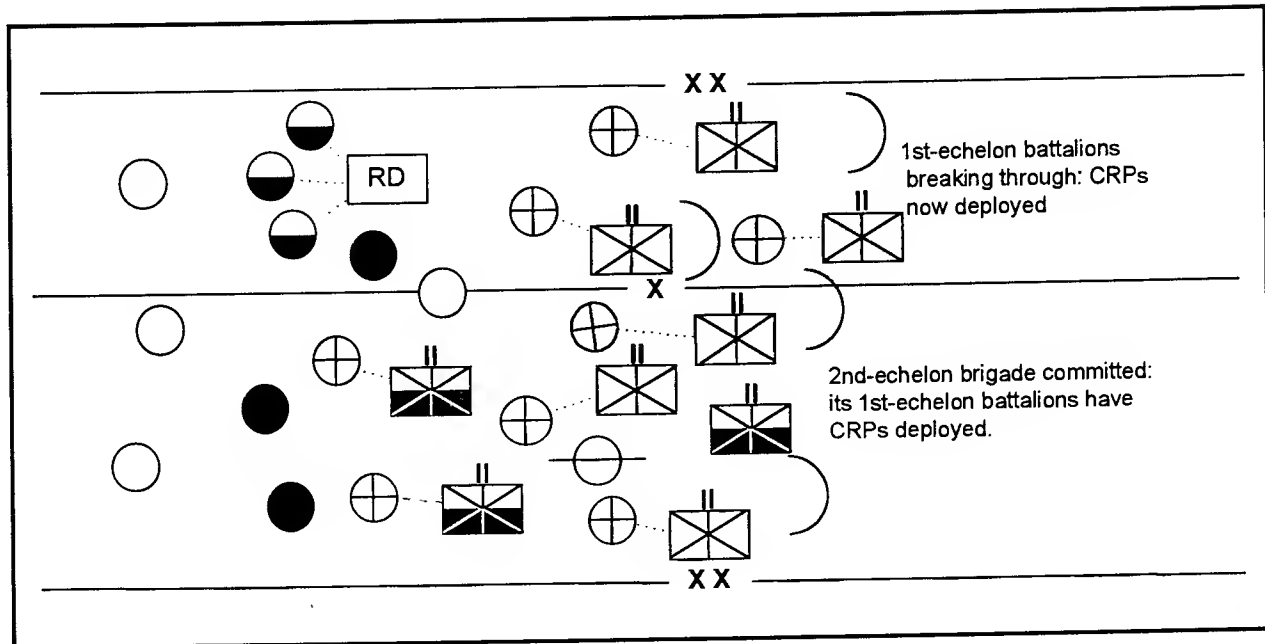
Figure 4-5. Reconnaissance during deep battle.

BRIGADE ORGANIZATIONS AND ASSETS

Divisional light infantry, motorized infantry, and mechanized infantry brigades have an organic reconnaissance platoon consisting of a platoon headquarters and four reconnaissance squads. (See the *Light OPFOR Organization Guide*.) Tank brigades, and separate light infantry, motorized infantry, and mechanized infantry brigades have organic reconnaissance companies consisting of a headquarters element, two reconnaissance platoons, and a motorcycle platoon. Brigade is the lowest level that has a dedicated reconnaissance organization.

Brigade reconnaissance can enter its reconnaissance sector as late as 6 hours prior to the main attack. Since brigade reconnaissance is a direct asset to the commander, its primary offensive mission is to conduct the route reconnaissance for the brigade's attack. It focuses on pinpointing any significant--

- Counterreconnaissance forces.
- Obstacles and minefields.
- Company battle positions.
- Antitank systems.
- Armor forces.
- Reserves.

Artillery Reconnaissance

All separate infantry brigades and divisional mechanized infantry brigades have an organic howitzer battalion. Divisional infantry brigades, except the mechanized infantry, have a mortar battalion. These battalions, including the mortar, have their own reconnaissance assets. These include artillery command and reconnaissance vehicles and mobile reconnaissance posts with battlefield surveillance radars in the howitzer battalions. Mortar battalions lack the reconnaissance vehicles, but still have man-portable battlefield surveillance radars. The missions are the same as artillery reconnaissance missions discussed in "Support From Higher Commands."

Chemical Reconnaissance

Brigades have a chemical defense platoon. Employment of its three chemical reconnaissance squads is the same as those from the chemical reconnaissance platoon at division level.

Engineer Reconnaissance

Each brigade has an organic engineer company. However, the company does not contain dedicated engineer reconnaissance assets. Individual engineer troops may reinforce various reconnaissance patrols within the brigade.

Reconnaissance Formations

Like division and district, a brigade conducts reconnaissance using the following types of patrols:
- Independent reconnaissance patrols.
- Commander's reconnaissance patrol.
- Officer reconnaissance.
- Chemical reconnaissance patrols.

See the division and district section for discussions on these types of patrols.

BATTALION RECONNAISSANCE

Battalion and below also have reconnaissance requirements, but must use assigned maneuver troops to fulfill the specific needs of the OPFOR tactical commander. These elements vary in size from a few troops to a platoon. They may or may not have reinforcements such as combat engineer or chemical reconnaissance personnel. These elements include observers, observation and listening posts, combat reconnaissance patrols, commander's reconnaissance patrol, officer reconnaissance patrols, and scout patrols. The following paragraphs discuss only those formations not discussed earlier in the division and brigade sections.

Observers

The commander assigns an **observer** to reconnoiter the ground and air enemy and terrain. He also observes the actions and positions of the command's subordinate units and adjacent units in all types of terrain, weather, time of day, and battle, during movement and at the halt. He locates his observation position near the commander and reports everything of significance. The observer uses binoculars, rangefinders, and night vision devices, if available, in the course of reconnaissance.

Observation or Listening Posts

The **observation or listening post** consists of up to a squad of trained soldiers with the equipment and documents necessary to reconnoiter the enemy and terrain. It normally reconnoiters the enemy in a given sector. The commander selects the locations for these posts based on their concealment from air and ground observation and favorable field of view. The unit organizes observation posts primarily in the defense, but can also establish them in preparation for an attack. As a rule, the commander places the posts in front of combat formations and/or on the flanks. They can be stationary or mobile.

In the defense, there is considerable emphasis on the use of static observation posts. Within each first-echelon battalion, these may include:
- Observation posts.
- The battalion command observation post.
- Numerous company and platoon observation posts.
- Artillery observation posts.
- Listening posts.
- Ground radar sites.

Combat Reconnaissance Patrols

Combat reconnaissance patrols are platoon-sized formations, which use a light, motorized, mechanized infantry platoon, or tank platoon as a base. Augmentation may come from engineer or chemical reconnaissance vehicles, or individual specialists. When in **march formation**, the commander forms CRPs to determine the current enemy situation. Normally formed at maneuver battalion, these patrols have the dual missions of reconnaissance and security. (See Chapter 3 for more detail.) Depending on the situation, the commander may dispatch more than one patrol. The commander, in forming multiple patrols, must weigh his desire for information against the drain on his combat power. The route security portion of its mission limits the patrol more in the depth of its actions than other reconnaissance patrols. It may engage a weaker force by ambush, but observation is the preferred method of reconnaissance. Given the reason for its formation, the patrol can only be successful if it survives to provide the commander detailed information on the enemy main body and the route on which it moves. The CRP mission is a temporary one. The platoon may return to its parent organization prior to the attack or any other subsequent mission.

Scout Patrols

All levels of the OPFOR must conduct patrolling as a basic reconnaissance mission. **Scout patrols** deploy from units performing a combat mission in isolation or when directed by their parent organization. Scout patrols are normally team- to squad-sized elements. The scout patrol mission is to detect the enemy and evaluate his capabilities in terms of manpower, equipment, and movement. Specifically, scouts perform the following functions:

- Determine the status and disposition of the enemy's engineer equipment.
- Observe the results of enemy and friendly fire.
- Search for indications of possible enemy use of nuclear and chemical weapons.
- Observe ground and air movement.
- Study the terrain within the enemy controlled area.

Scout patrols from motorized infantry battalions perform their missions in dismounted formations. The chief of staff designates patrol routes and surveillance areas and incorporates them into the unit's reconnaissance and surveillance plan.

March

Scout patrols at battalion level normally patrol within 2 to 3 km of the unit, both to the front and the flanks. The patrol conducts reconnaissance within the range of fire support. It moves between adjoining enemy flanks and uses ravines and other terrain that provide concealment from the enemy and protection from enemy direct fire. It crosses open terrain at maximum speed without halting. If the patrol's mission is observation and surveillance, it attempts to move without detection by or engagement with the enemy. Under normal circumstances, the patrol, upon contact with the enemy, attempts to draw the enemy's fire to locate his weapons, then withdraws before becoming decisively engaged. When the patrol suspects the enemy is present, but the enemy refuses to reveal himself, the patrol may try to trick the enemy into opening fire. After reporting on the enemy, the patrol attempts to continue its mission, avoiding further contact. If the patrol meets an enemy of superior strength, it disengages and uses concealing terrain to bypass the enemy force. It ambushes small enemy elements, particularly enemy reconnaissance, to eliminate them or to take prisoners.

Attack Against Defending Enemy

In the attack against a defending enemy, a scout patrol--

- Locates the enemy and determines his capabilities and intentions.
- Ascertains weak areas, troop strengths, obstacles, and extent of defensive preparations.
- Notes enemy reserve strength and movement.
- Determines the direction of the enemy counterattack and the line of departure.
- Pinpoints artillery and mortar locations.
- Evaluates key terrain.
- Notes and reports NBC-contaminated areas and bypass opportunities.

Although patrols carefully inspect terrain and local features for signs of enemy presence, the rate of reconnaissance must not delay the movement of the parent unit following behind the patrol.

Pursuit

When in pursuit, scout patrols reconnoiter--

- Enemy withdrawal preparations, and commencement times.
- Speed, direction, and mode (mounted, dismounted) of enemy withdrawal.
- Unit identification.
- The enemy's security forces, rear guard, and combat efforts.
- Enemy delay positions, and reserve movement direction.
- Enemy line of advance.
- Enemy counterattack efforts.

RECONNAISSANCE METHODS

All reconnaissance detachments, groups, and patrols use standard methods in the conduct of their missions. These are observation, sweep, ambush, raid, and combat.

Observation

Observation is the coordinated inspection of the enemy, terrain, weather, water obstacles and adjacent friendly forces during all types of combat activity. It is the most common and most important method of gathering reconnaissance information. Observation takes place from dismounted patrols, vehicles, and aircraft. It is the primary technique used by ground reconnaissance. Observation includes establishing and using observation and listening posts, which may be mobile or temporarily stationary.

Sweep

A sweep is a surprise attack against enemy observation posts or other isolated positions near the forward edge. The primary objective of a sweep is to capture enemy soldiers and documents for exploitation. It normally occurs when the OPFOR is in contact with the enemy. The force conducting the sweep can be as small as a few dismounted soldiers or as large as a platoon. In a typical sweep, a patrol (platoon-sized) divides into an assault element, a fire element, and an engineer element. The engineers clear a path through obstacles for the assault element. The assault element attacks the enemy outpost, captures prisoners and documents, and attempts to retreat to friendly positions. The fire and engineer elements cover the withdrawal.

Ambush

An ambush is a planned or spontaneous attack along probable routes of movement, such as roads, paths, bridges, or lanes through obstacles. Enemy ground reconnaissance, ground surveillance radars, engineer, and C^2 vehicles are the most common targets. Usually a platoon-sized reconnaissance or infantry unit or a team of specially chosen NCOs and privates conduct an ambush. The ambush commander divides his ambush force into an observation element, an assault element, and a fire element. The observation element alerts the rest of the ambush formation to the enemy's approach. When the enemy reaches the designated kill zone, the fire element swiftly engages the enemy, and the assault element then attempts to seize prisoners. Following the assault, the ambush force searches the vehicles and dead soldiers for documents. The ambush force then hides the vehicles and the bodies before returning to its parent unit with prisoners and captured documents.

Raid

A raid is a surprise attack against key targets such as--
- Command posts.
- Airfields.
- Logistics facilities.
- Enemy reserves.
- Enemy air defense and artillery radar sites.

This is a planned mission and is not conducted in the course of another reconnaissance mission. Except for radar sites, the size of the targets dictates that reconnaissance groups conduct this mission. The size of a reconnaissance group allows for the dispatch of multiple patrols, increasing the likelihood of finding the target. Breaking into smaller patrols also decreases the possibility of detection. When the one or more patrols locate the target, the entire formation regroups and attacks it simultaneously. A raiding party gathers what prisoners and documents it can, but information collection is a secondary responsibility.

Combat

The OPFOR's most ambitious, and least preferred, ground reconnaissance method is reconnaissance by combat. The primary purpose of reconnaissance by combat is to discover weak points in the enemy's defenses. When other means of gaining information have failed, the OPFOR can use this method. The unit that conducts reconnaissance by combat is normally an infantry company or battalion. Reinforcements include specially trained reconnaissance personnel, as well as engineer, chemical defense, and artillery reconnaissance personnel. Units conducting the reconnaissance by combat may receive artillery, air defense, and aviation support.

The unit performing this mission penetrates enemy defenses to a depth sufficient to cause him to reveal his dispositions and firing systems in response to the penetration. This aggressive method carries with it a distinct risk. When used against an enemy prepared for it, or when attempted without sufficient preparation or expertise, it can fail. Aside from resulting in heavy casualties, it may reveal friendly intentions.

Figure 4-6. Key to symbols used in this chapter.

Offensive actions are the most effective and decisive way to attain a clearly defined objective. This chapter focuses on truck-mounted, motorized infantry **division and below** and how other arms, possibly including tanks, support them. For more detail on mechanized infantry and tank tactics, see the *Heavy OPFOR Tactics Handbook*. Motorized infantry, once it has dismounted fights the same as light infantry; however, light infantry may be more common in restricted terrain. The focus here is also on the offense within first-echelon divisions and divisional brigades, since military districts without standing divisions (or not in the region serving as the base for the expeditionary army) have the capability to conduct only limited-objective offensive actions. Limited objective attacks are also possible in military regions or districts adjacent to the region from which the expeditionary army bases Separate brigades conduct the supporting attacks. Separate brigades conduct the offense like divisions, but on a smaller scale.

Section I. Fundamentals of Offense

Success in the offense depends on--
- The timely commitment of the second echelon or reserves.
- Shifting the unit's axis of main attack to a different direction when resistance is too strong.
- Consequently regrouping forces from less favorable axes.

The underlying principle is the continual reinforcement of success and not failure. The continuation of the advance can expose to attack the flanks, the rear and lines of communication (LOCs) of a successfully defending or counterattacking enemy. Only the commander makes the decision to shift the main attack onto a new axis. The resultant regrouping must be rapid and secret, quite possibly with attacks continuing on the former axis as deception.

PRINCIPLES OF OFFENSE

There are four general principles of the offense. These are **initiative, surprise, speed** and **concentration**.

Initiative

The goals of a battle and the methods devised for their attainment must reflect initiative. The success of these plans rests with the ability of higher-echelon commanders to make bold decisions, then act resolutely to implement those decisions. Success belongs to the force that boldly seizes the initiative. With the initiative, the force has the freedom of action necessary to dictate the conditions of combat. Initiative allows commanders to shape the battlefield. It is the key to the offense.

Surprise

Surprise is striking the enemy at a time or place in a manner for which he is not physically or mentally prepared. Knowing the enemy commander's intent and denying his ability to conduct thorough and timely intelligence is crucial. Avoiding predictability and using deception, cunning, and guile also help to gain surprise. The direction, timing, violence, boldness, and force of the attack achieve surprise. Surprise delays enemy reactions, overloads and confuses enemy C^2, induces psychological shock in enemy soldiers and leaders, and reduces the coherence of the enemy defense. By diminishing enemy combat power, surprise enables an attacker to succeed with fewer forces than he might otherwise require. Surprise is particularly significant in light of the destructive power of modern weapons systems. It is important to achieve surprise at the tactical level in order to overcome any potential enemy's technological advantage, reduce personnel and equipment losses, and improve the prospects for success.

The attacker ensures surprise by concealing the time, location, and strength of his attack. OPFOR doctrine emphasizes the importance of concealment and deception to disguise the location of the main attack. Achieving total surprise once hostilities have begun is difficult. The proliferation of modern surveillance and warning systems and the presence of global commercial news networks make complete surprise less likely. Nonetheless, surprise is still possible by acting in a manner the enemy does not expect. The enemy may anticipate an attack, but the OPFOR believes it can still deceive him as to its nature, its timing, and its force. Bad weather, seemingly impassable terrain, feints, demonstrations, and false communications can all to lull the enemy into false expectations. Sudden and violent attacks have a paralyzing effect on the enemy. So do attacks from unanticipated directions. Airborne, air assault, and special operations forces inserted deep into the enemy's rear tend to have a disconcerting psychological effect on the enemy force.

Consistent with the principle of doing the unexpected to surprise the enemy, the OPFOR may attack through difficult terrain against lightly defended or undefended areas. An OPFOR commander considers an undefended wooded area a better avenue of approach than an open area dominated by enemy assets. If possible, the OPFOR will attack along forest trails or ridge lines.

Speed

A high rate of advance characterizes the offense. Forces participating in the offense must, therefore, be mobile. While fighting through the enemy defenses, the OPFOR may sacrifice speed initially. Once it achieves a penetration, the rate of advance increases considerably. Consistently maintaining the rate of advance rests on striking the enemy before his defensive preparations are complete or finding weaknesses within prepared defenses. The OPFOR attempts to bypass major concentrations of forces and cripple the enemy by destroying or disrupting his C^2 facilities, his logistics system, and his ability to reinforce his defense. If forced to confront a defending enemy across the entire frontage of the attack zone, the OPFOR will avoid a costly, time-consuming battle of attrition by developing penetrations and committing highly mobile forces into the enemy rear.

Concentration

Concentration is the ability to mass effects without necessarily massing large formations and is therefore essential for achieving and exploiting success. However, concentration of any size force is also a vulnerability. Modern technology makes the process of concentration more difficult and dangerous. To overcome these difficulties, commanders manipulate their own and the enemy's concentration of forces by some combination of dispersion, concentration, deception, and attack. By concentrating forces rapidly along converging axes, the attacker can overwhelm enemy forces at the point of attack by massing the effects of combat power. At every level, commanders attempt to conceal the concentration of their forces until it is too late for the enemy to react effectively. Units mask the patterns of their movement and preparatory activity that might reveal the direction or timing of attack. Commanders monitor logistical buildups, patrolling activities, communications, and indirect fires to keep the enemy from seeing a visible change in the attacking force's deployment pattern. Speed, security, and deception are essential to successful concentration of forces. Concentration requires careful, prior coordination. After a successful penetration, attacking OPFOR commanders may keep their force concentrated to gain full advantage of its momentum. If the penetrated enemy forces begin to withdraw, OPFOR commanders may choose to disperse their forces across a broader frontage. This allows some forces to conduct pursuits and others to continue the advance into the enemy's rear.

After penetrating the forward edge of an enemy defense, the OPFOR continues, without pausing, to attack farther into the depths of the defensive positions until the mission is complete. It bypasses enemy strongpoints that it cannot reduce immediately. If it cannot bypass them, it attacks them from the flanks or rear. The OPFOR uses massed fires to provide close and continuous fire support, and may use smoke and flame weapons against strongpoints.

COMBINED ARMS TACTICS

Combined arms cooperation is the basis for close and interrupted interaction of all forces to best exploit their capabilities. Each arm provides strength and protection where another arm is vulnerable. The tank is a critical element for combined arms cooperation in the attack. However, the tank can only be successful only if it is protected from air attack and enemy antitank systems.

The OPFOR trains as a combined arms force as often as is practical. It understands the complications of combat actions combining armored vehicles and infantry. It thoroughly plans, coordinates, and rehearses combined arms combat. It uses every opportunity to incorporate combined arms actions into its attack planning process. In this manner, it learns how to employ and support these units.

OPFOR leaders know what heavy and light forces can do for each other. Infantrymen assist heavy forces by finding and breaching or marking antitank obstacles. They detect and destroy or suppress enemy antitank weapons. They may also designate targets for tanks and protect them in restricted terrain. Heavy forces assist infantrymen by leading them in open terrain and providing them a protected, fast-moving assault weapons system. They suppress and destroy enemy weapons, bunkers, and tanks by fire and maneuver.

Attacking on Converging Routes

Tanks and infantry move on separate routes that converge on the enemy position. They each chose routes suitable for their movement. Armored vehicles may first support the infantry by fire, then close on the objective in time to assault it along with the infantry. (See Figure 5-1.) This may require the infantry to breach obstacles and destroy enemy antitank systems to assist armored vehicles in reaching the enemy position.
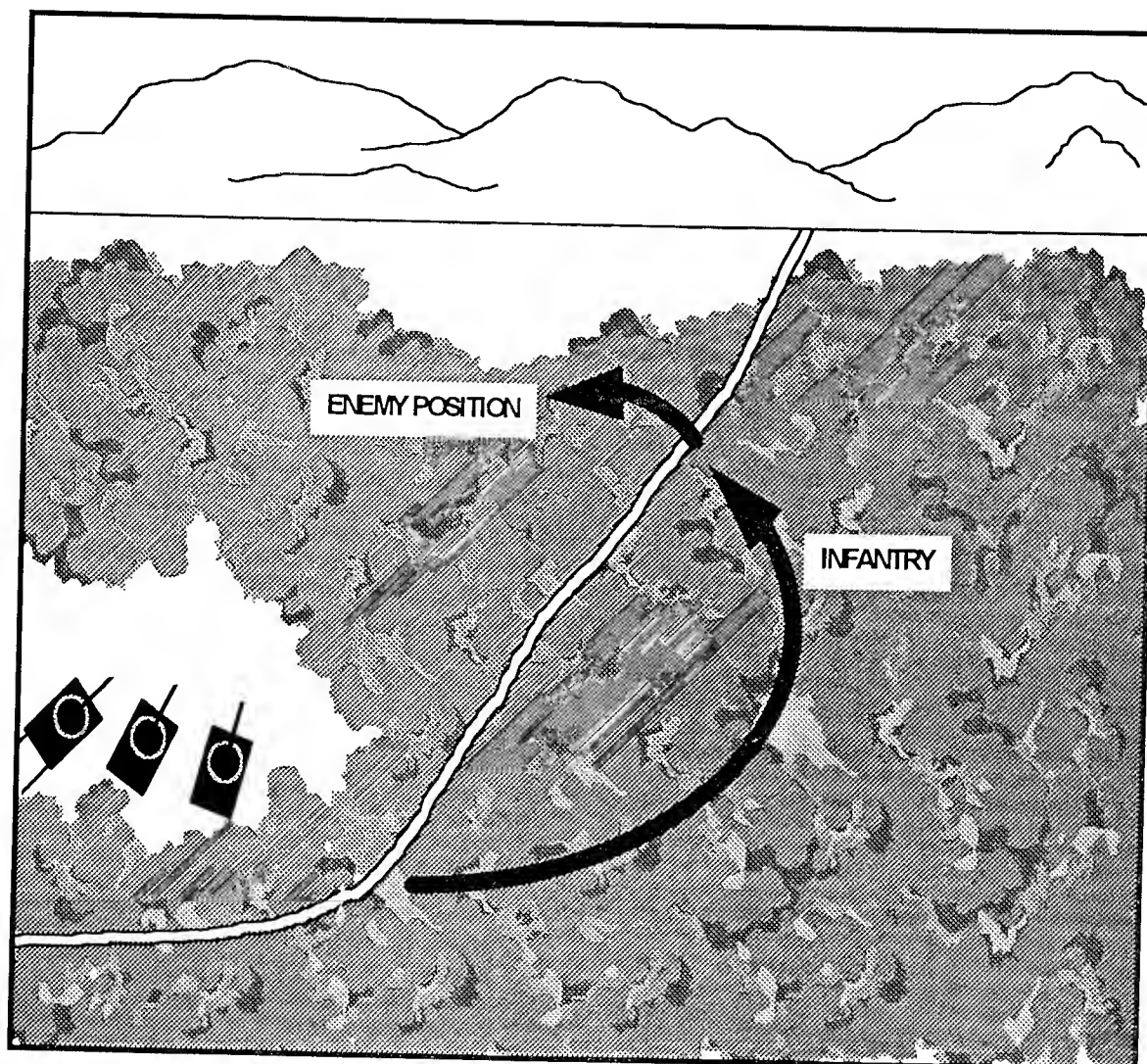
Figure 5-1. Attacking on converging routes.

Attacking on Same Route

When armored vehicles and dismounted infantry attack on the same route, they may move at the same speed or at different speeds. (See Figure 5-2.) They use the same speed when there are poor positions for the tanks to provide covering fire, or when there is a need for close, mutual support. They move using different speeds when there are obstacles that the infantry must clear or when the route offers good cover and concealment for the infantry, but not the tanks. In these cases, the tanks support by fire while the infantry moves to its assault position. The tanks then move forward to assault with the infantry. The tanks may, however, lead the infantry against an enemy that does not have well-prepared positions with overhead cover, or does not present a great antitank threat.
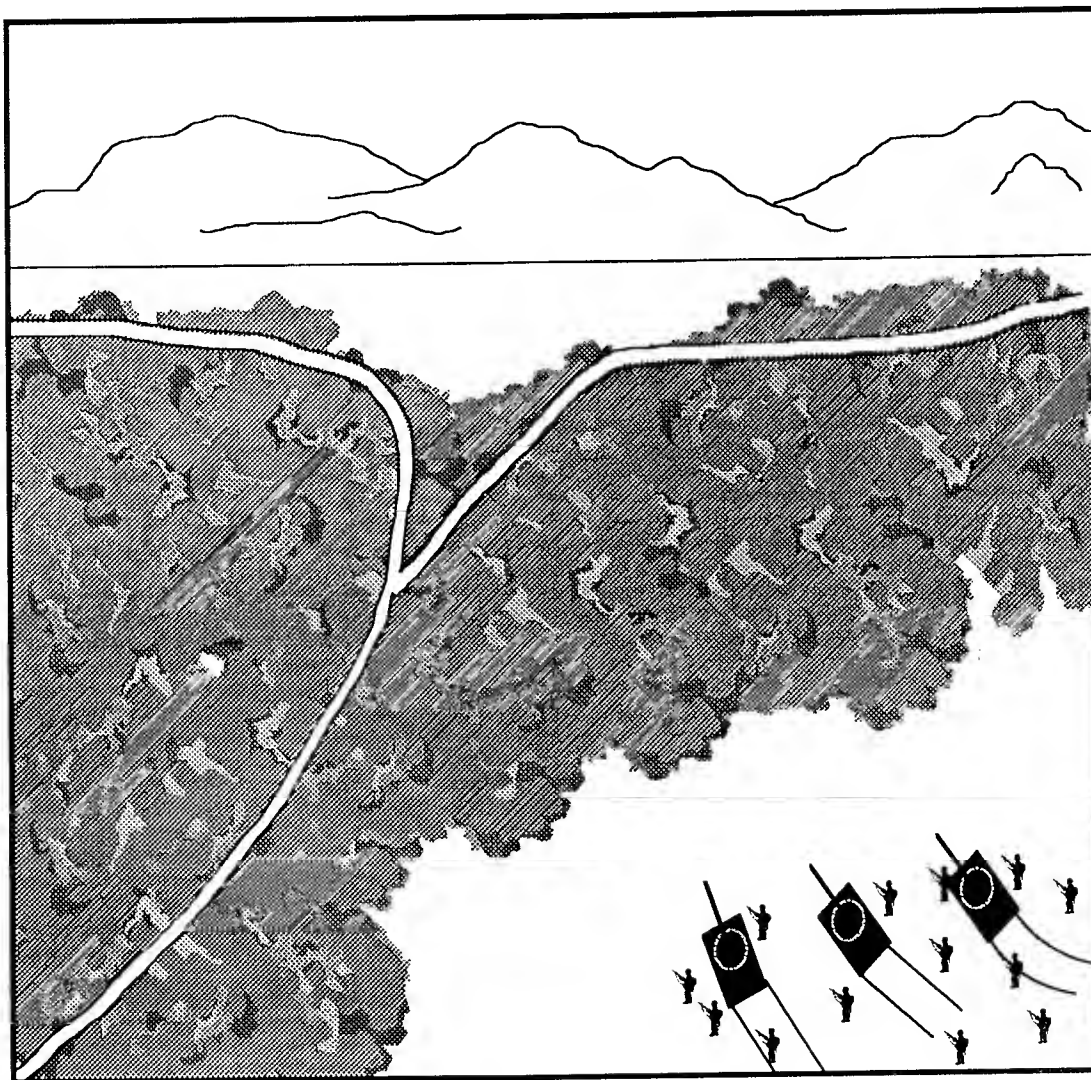
Figure 5-2. Attacking on the same route.

Supporting by Fire Only

When obstacles keep the tanks from closing on the enemy position, the tanks support by fire only. (See Figure 5-3.) The armored vehicles occupy positions where they can support the attacking infantry. When the infantry breaches the obstacles or locate a bypass, the tanks rejoin the infantry.

FORMS OF MANEUVER

Like many aspects of OPFOR doctrine, the forms of maneuver have seen little change in modern history. All of the armies of the world understand them. Offensive success therefore depends less on the choice of forms than on their creative combination and especially on the skill and audacity with which commanders execute them.

Maneuver is a basic component of combat. It is an organized movement during combat that puts troops in a more advantageous position than the enemy. From this position, they can deliver a decisive attack. Maneuver has a significant role in the OPFOR concept of battle.
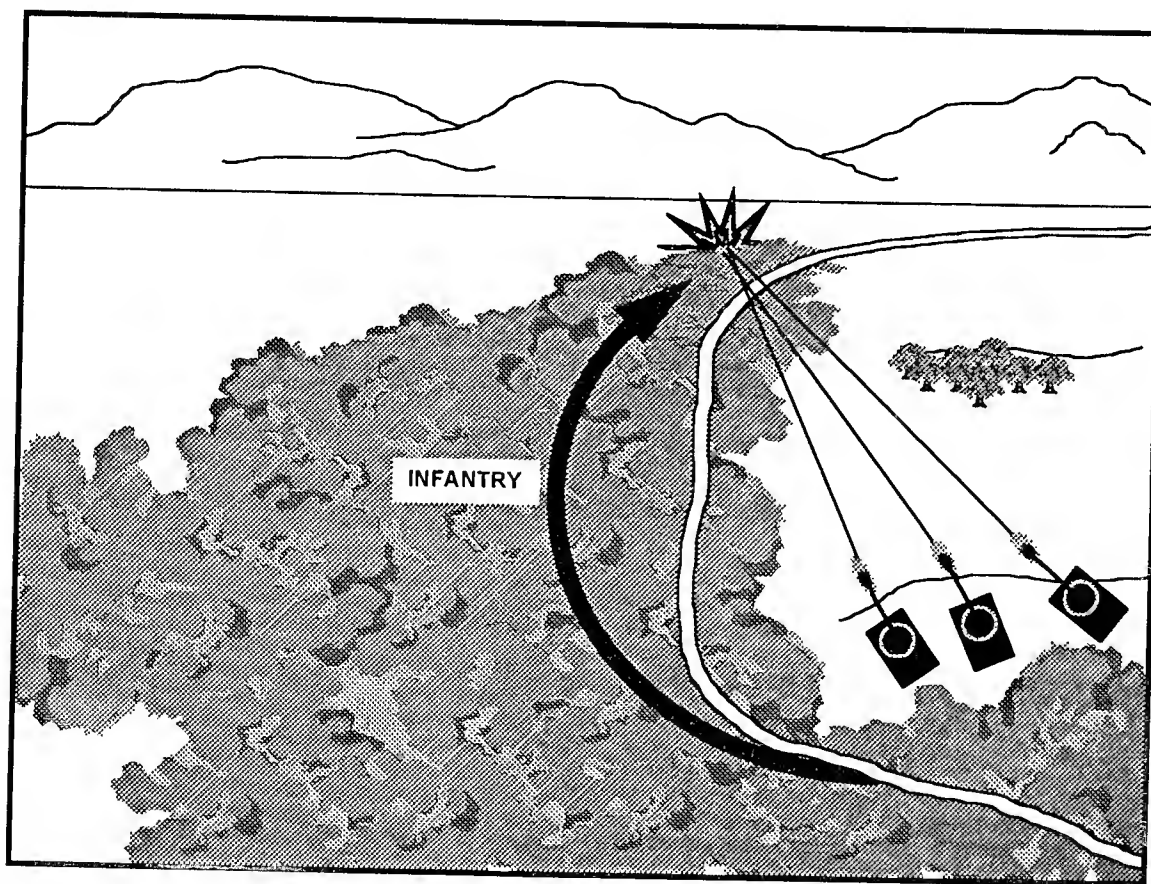
Figure 5-3. Tanks supporting by fire only.

However, maneuver alone does not achieve victory. The OPFOR often needs an effective fire strike to make maneuver possible. Unlike many other armies where fire strikes support maneuver, OPFOR ground maneuver capitalizes on gains achieved by fire strikes. The "maneuver by fire" is also important in OPFOR tactics.

The commander uses maneuver to seize and hold the initiative and defeat enemy plans. Maneuver achieves the essential superiority of fire, forces, and equipment in the crucial sector, and increases the force of the strike. Two principal forms of maneuver form the basis for OPFOR offensive actions. These are **frontal attack** and **envelopment**. The **turning movement**, **infiltration**, and **penetration** are either combinations or derivatives of the two basic forms.

Frontal Attack

The frontal attack strikes the enemy across a **broad frontage** and over the most direct approaches. (See Figure 5-4.) The OPFOR normally uses it when commanders possess overwhelming combat power and the enemy is at a clear disadvantage. It pressures all enemy defenses in a given sector simultaneously. **Multiple axes of advance**, intended to achieve a penetration of enemy defenses in one or more places, characterize the frontal attack.

The frontal attack may conceal the axis of the main attack by a combination of deception and strong pressure across the entire area of contact. This is the least favored form of offensive maneuver. Frontal attack is also the least economical form of maneuver, since it exposes the attacker to the concentrated fire of the defender while simultaneously limiting the effectiveness of the attacker's own fires.

As the simplest form of maneuver, the frontal attack is useful for overwhelming light defenses, covering forces, or disorganized enemy forces. At the tactical level, a fixing force as a supporting attack to an envelopment commonly uses this form of maneuver. The frontal attack may also be part of an exploitation or pursuit.
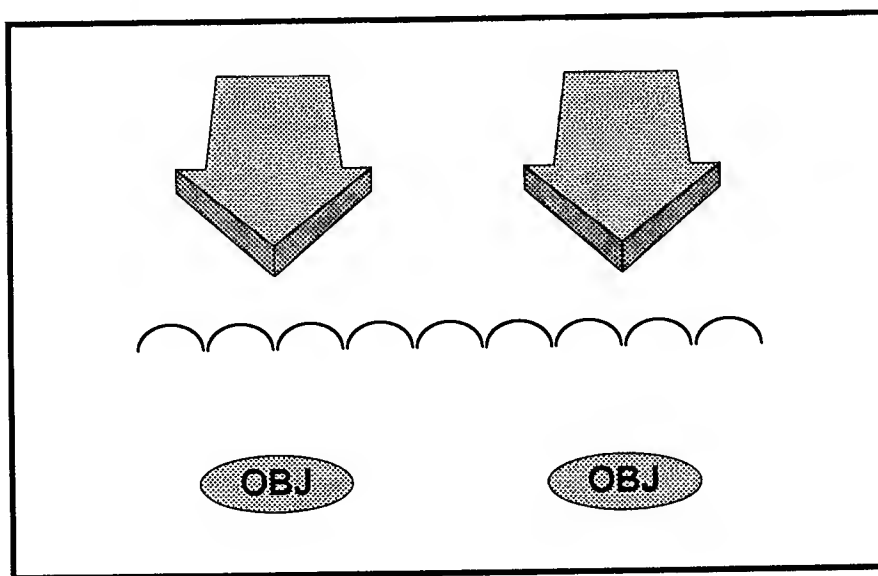
Figure 5-4. Frontal attack.

Envelopment

Envelopment is the form of maneuver that applies strength against weakness. It avoids the concentration of forces and fires along the enemy's forward edge. The attacker maneuvers the bulk of his forces around or over the enemy's defenses in order to strike him in the flanks or rear. Concurrently, supporting attacks along the enemy's forward edge fix enemy forces in their defenses. Success of the envelopment depends on the creation or discovery of an assailable flank. In meeting battles or counterattacks, this may actually be the flank of the enemy forces. If the enemy is defending, this is probably a gap or breach of the enemy's defense. There are two types of envelopment: **close envelopment** and **deep envelopment**.

Close Envelopment

The close envelopment is a shallow maneuver conducted against the enemy flanks. (Some doctrines, other than OPFOR, call this a flank attack.) The goal is to strike the enemy defenses and units from the flank, thereby avoiding a frontal attack. It is primarily a tactical maneuver, conducted at division level and below. (See Figure 5-5.) Forces conducting the close envelopment and those conducting a simultaneous frontal attack coordinate fire support.

Deep Envelopment

The OPFOR directs deep envelopments at the enemy's rear areas. It is a tactical maneuver in which the attacking force maneuvers past the enemy force and attacks from the rear. The attacker is able to sever the defender's LOCs and prevent reinforcement or withdrawal. (See Figure 5-6.) The OPFOR coordinates the actions between the forces conducting a deep envelopment and the forces advancing from the front. Forces conducting a deep envelopment may receive additional artillery support. This is because the depth of the deep envelopment may exceed the range of friendly fire support advancing from the front.
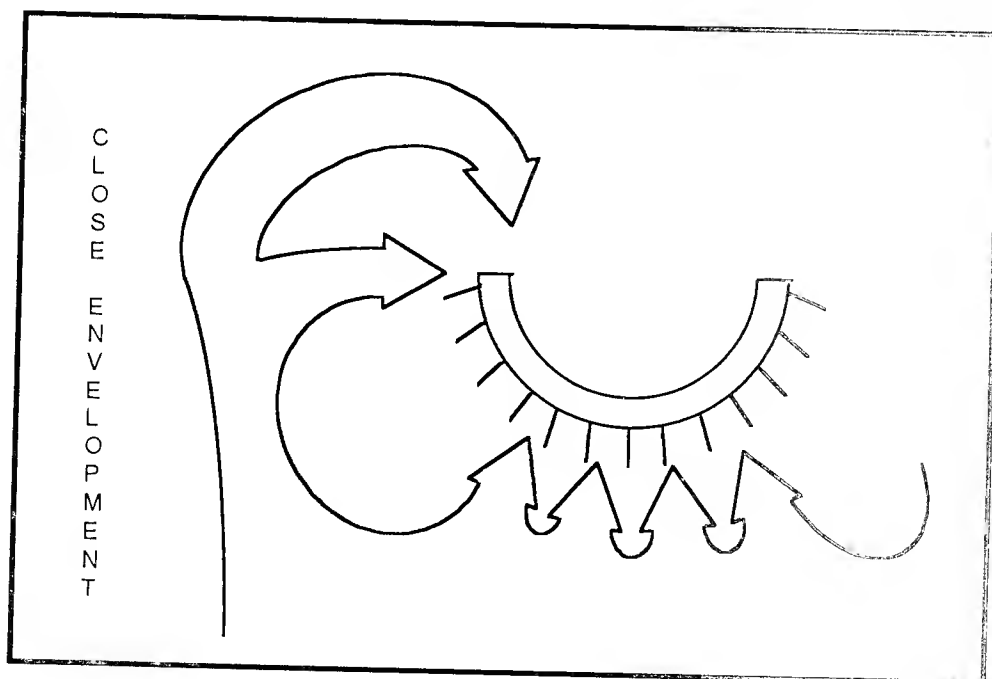
Figure 5-5. Close envelopment.

A forward detachment (FD) could conduct a deep envelopment. The FD goes through a gap in forward enemy defenses resulting from the first-echelon forces' penetration. A commander may also employ airborne or heliborne forces for the deep envelopment.

Double Envelopment

The OPFOR prefers a **double envelopment**, which can be a combination of two deep envelopments, two close envelopments, or a deep and a close envelopment. It expects to achieve the most success with an envelopment of both flanks, encircling the enemy rear. (See Figure 5-6.) Combining envelopments creates favorable conditions for attacking the enemy's flanks and rear. The OPFOR goal is to encircle enemy groupings, split them, and then destroy them. Heliborne assault troops can also land simultaneously in the enemy rear. These troops can then assist in accomplishing a double envelopment. Forces carrying out close, deep, or double envelopments ordinarily maneuver in a march or prebattle formation when enemy resistance is light enough not to require the use of battle formation. The enveloping force can transition from march to prebattle to battle formation as the situation dictates.

Turning Movement

The turning movement is a variant of the envelopment, in which the attacker attempts to avoid the defense entirely and seeks to secure key terrain deep in enemy's rear and along his LOCs. Faced with a major threat to his rear, the enemy must "turn" out of his defensive positions and counterattack rearward at a disadvantage. (See Figure 5-7.)
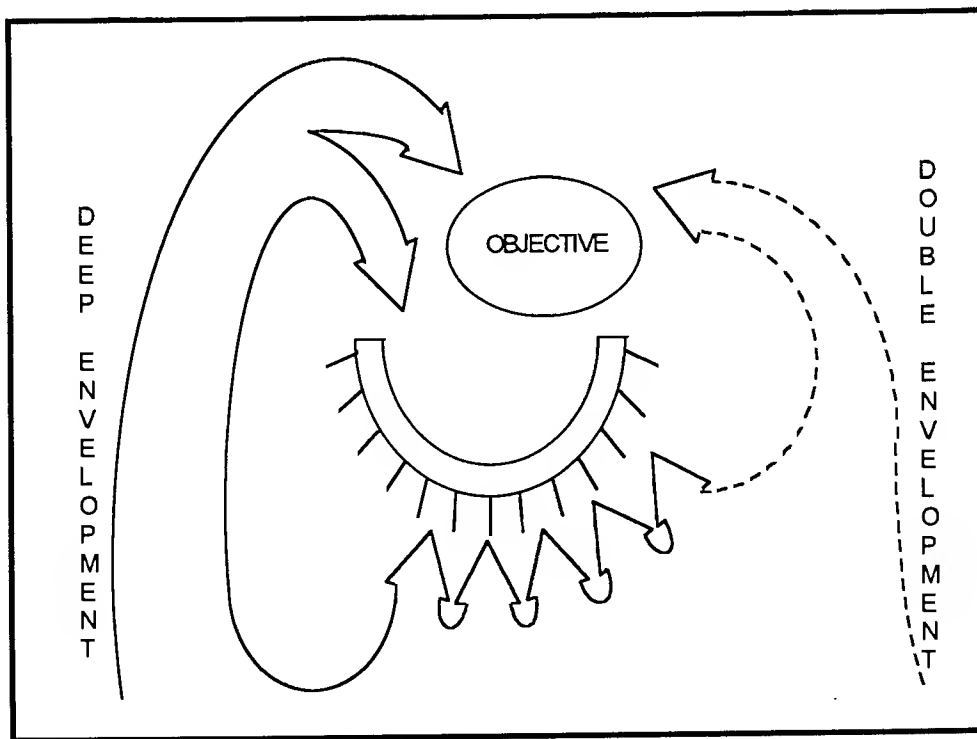
Figure 5-6. Deep and double envelopment.
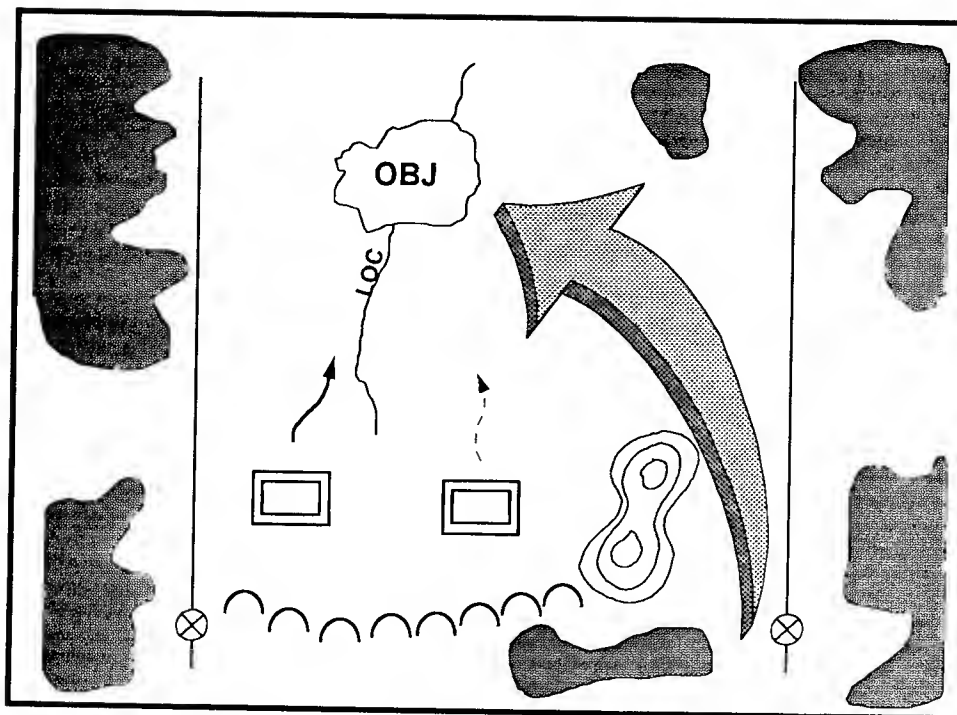
Figure 5-7. Turning movement.
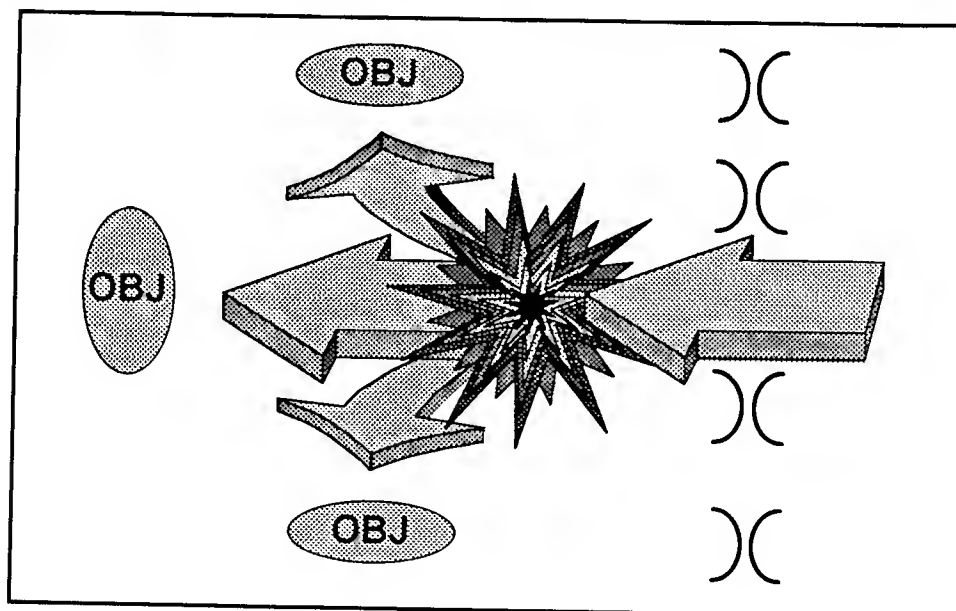
Figure 5-8. Penetration.

Penetration

The OPFOR attempts a penetration when enemy flanks are not assailable and time does not permit some other form of maneuver. It attempts to rupture enemy defenses on a narrow frontage and thereby create both assailable flanks and access to the enemy's rear. (See Figure 5-8.) The OPFOR masses sufficient combat power at the point of penetration to overwhelm the enemy and gain the advantage. It also masses fires from all available means at the point of penetration to make the breach, hold open the shoulder, and

cripple enemy counterattacks. Second-echelon forces rapidly exploit success of the penetrating forces. Since it pits the attacker's strength against the defender's, penetration may result in higher casualty rates than other forms of maneuver.

Infiltration

Infiltration is another means of reaching the enemy's rear without fighting through prepared defenses. (See Figure 5-9.) It is the covert movement of all or part or the attacking force through enemy lines to a favorable position in his rear. Light infantry units are especially valuable for infiltration missions. If light infantry is unavailable, dismounted motorized infantry conduct infiltration missions. Infiltration

forces may also link up with heavier forces in support of an attack. Other missions include raids and ambushes.

Successful infiltration requires, above all, avoiding detection and engagement. Since that requirement limits the size and strength of the infiltrating force, infiltration can rarely defeat a defense by itself. The OPFOR normally uses it in conjunction with some other form of maneuver. Infiltration is most feasible in rough terrain and reduced visibility, or in areas poorly covered by observation and fire. The OPFOR uses infiltration to--

- Attack defensive positions from the flank and rear.
- Secure key terrain in support of the OPFOR main attack.
- Disrupt the enemy's rear.
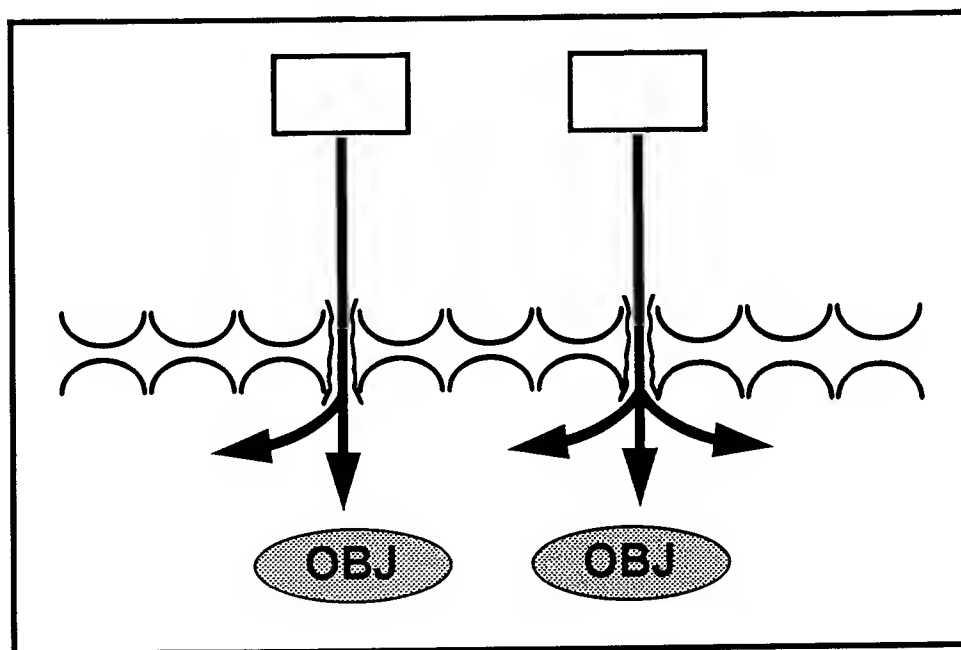
Figure 5-9. Infiltration.

ELEMENTS OF COMBAT FORMATION

OPFOR tactical commanders organize for combat by assigning units to function as elements of the combat formation. The combat formation corresponds to the situation and facilitates attaining the goal of battle. It should ensure--
- Successful destruction of the enemy.
- Achievement of the assigned mission.
- Combination of fire, movement, and maneuver in the course of the attack.
- Continuous C^2.

The following paragraphs describe the various elements of this OPFOR organization for combat.

Reconnaissance

The location of the reconnaissance objectives and the enemy dispositions determine how far in front of their parent organization the reconnaissance assets move. In the attack against a defending enemy, they typically reconnoiter the enemy force whose destruction is the parent organization's immediate mission. They then reconnoiter to the depth of the subsequent mission. In the march, their purpose is to provide the commander maximum warning of enemy forces, in terms of time and distance, and to establish the strength and disposition of these forces. They also identify terrain features that could slow the OPFOR rate of advance or hinder the accomplishment of the parent organization's mission. (For more detailed information, see Chapter 4, Reconnaissance.)

Forward Detachments

A reinforced maneuver battalion that may or may not be a combined arms force is the base organization for a forward detachment (FD). Divisions commonly establish a battalion-sized FD to maneuver ahead of the lead brigades. This battalion comes from a second-echelon brigade. If the division is using a single-echelon formation, this battalion is more likely to come from the brigade conducting the supporting attack, but may come from one of the brigades in the main attack. Although a division normally only has one FD, there can be several within the division because each brigade may also form its own company-sized FD.

The FD works for the commander that directed its formation. There is no set distance between the FD and the main body. The FD precedes the parent organization's main body by 1 to 2 hours. The FD focuses its combat actions on securing key terrain that will facilitate the division's attack or forward movement and conducts raids against important enemy sites. The detachment's actions are preemptive in nature, intended to prevent the enemy from establishing defensive positions. Secondary missions include destroying covering forces and engaging enemy reserves to prevent them from influencing the main battle. The FD does not have to follow a specific axis of advance, but its objectives are normally on the main axis of advance for the parent organization. After achieving its objective, the commander may order the FD to defend the objective until its parent organization's main body links up with it, or it may assume a new offensive mission. An FD may link up with airborne or heliborne forces that have landed on these objectives. Although the FD attempts to avoid enemy contact while moving to its objective, elements of the FD may also conduct raids against key targets enroute to the FD's objective. FD objectives include passes, defiles, road junctions, and water crossing sites. FDs conduct reconnaissance as they advance.

In the march, the FD normally moves ahead of or parallel to the march security elements (advanced guard) of the lead brigades but behind the division's reconnaissance patrols. The commander of the FD can also dispatch his own reconnaissance patrols.

Against Unprepared Defense

The characteristics of the offensive are surprise, speed, and attempts to preempt or forestall the enemy. FDs may attempt to strike deep into the enemy **tactical zone of defense** (main defense area) before enemy defenses are fully organized and solidified. Reinforced battalions (or companies) given such missions receive full support from artillery and direct-support aviation.

Against an unprepared defense, where the enemy has deployed only his covering force, FDs at all levels may initiate the attack. If the enemy has advanced during the night before the attack, FDs would then attack on multiple axes across the OPFOR attack zone to penetrate **enemy covering forces** rapidly. They would then drive at top speed in pre-battle or march formation to seize and hold key terrain within the enemy division's **main defense area**, thus preempting enemy occupation of positions there. There may also be company- or battalion-sized **heliborne landings**, designed for linkup with the FDs. The purpose of such tactics in support of an attack is to disrupt or preempt enemy defensive structure while opening multiple avenues for swift attacks by larger first-echelon forces. Figure 5-10 shows typical depths of FD missions against an unprepared defense.

Once the penetration battle is complete, FDs at all levels of command lead the exploitation or pursuit, helping to envelope and destroy enemy forces. Throughout the exploitation, strong FDs continue to press the advance into the enemy rear on several axes. Numerous deep penetrations by FDs early in the battle would result in an **intermingling of enemy and friendly forces**. This situation would complicate or forestall enemy use of weapons of mass destruction. The OPFOR will accept heavy losses in such deep-penetration forces, if it could cause an early collapse of the enemy's defensive structure before he could resort to use of these weapons.

AGAINST UNPREPARED DEFENSE

FD Subordination	Mission	Depth (km)
Division	Rear of tactical zone of defense	30-50
Brigade	Front of tactical zone of defense	20-30

AGAINST PARTIALLY PREPARED DEFENSE

FD Subordination	Mission	Depth (km)
Division	Front of tactical zone of defense	20-30

Figure 5-10. Forward detachment missions.

Against Partially Prepared Defense

More often, the OPFOR will find the enemy defense **partially prepared**, with the covering force in place and the tactical zone of defense partially occupied. An FD could attack under these conditions if provided heavy fire support. Its mission is to overcome the covering force and penetrate into the tactical zone of defense to prevent the enemy from establishing a firm, continuous defense. It could also facilitate the commitment of the main force. Figure 5-10 shows typical mission depths under such conditions, which would be one step shallower than for an unprepared defense.

During the attack, FDs use reconnaissance to detect gaps in enemy defenses occurring naturally or created by artillery fire. If a gap exists, or in fire support has neutralized sectors of the defense, the FD moves quickly through the gap to secure objectives in the enemy brigade or division rear.

Against Fully Prepared Defense

If the OPFOR encounters a prepared, fully occupied defense, their FDs do not participate in the battle until first-echelon forces have completed the penetration of enemy first-echelon positions (the front of the tactical zone of defense). In rare instances, an FD could assist the main forces in penetrating the covering force or initiate subsequent attacks into the tactical zone of defense. However, it is unlikely that it would emerge still capable of further missions.

Echelons

The OPFOR tactical combat formation in the offense is a response to the depth and preparedness of enemy defenses. The intent is to build combat power continuously on the forward edge. OPFOR tactical commanders organize their forces in either two echelons or in one echelon with a reserve. The rule of thumb is that, if the enemy defense has a second echelon (or reserve), the OPFOR would employ a second echelon to sustain the momentum of the offensive. The OPFOR does not consider a three-echelon formation to be normal, but sometimes uses it when advancing in the mountains, because of limited maneuver space in an advance along a narrow valley.

Single-Echelon Formation

If the enemy has not prepared its defenses in depth or has not supported them by a large reserve, the OPFOR would probably attack in a single strong echelon followed by a small reserve. (See Figure 5-11 for an example.) It could also use this formation when attacking on a secondary axis. When using this formation, the commander should maintain a reserve to retain the ability to influence the battle. If he commits his reserve, he must form another one immediately, normally from an organization not in contact with the enemy.

Two-Echelon Formation

A two-echelon combat formation is normal when attacking a defense that--
- Is prepared or at least partially prepared in depth.
- Has a reserve.
- Is on the higher commander's main axis.

The first echelon normally contains the bulk of the combat power. It must achieve a penetration of enemy defensive positions in order to achieve its mission. Its mission is to destroy the enemy's corresponding first echelon (immediate mission) and develop the offensive into his depth (subsequent mission). The commander's concept of the battle then calls for commitment of the second echelon to complete the subsequent mission, if the first echelon is not capable of achieving it. (See Figure 5-12 for an example.)
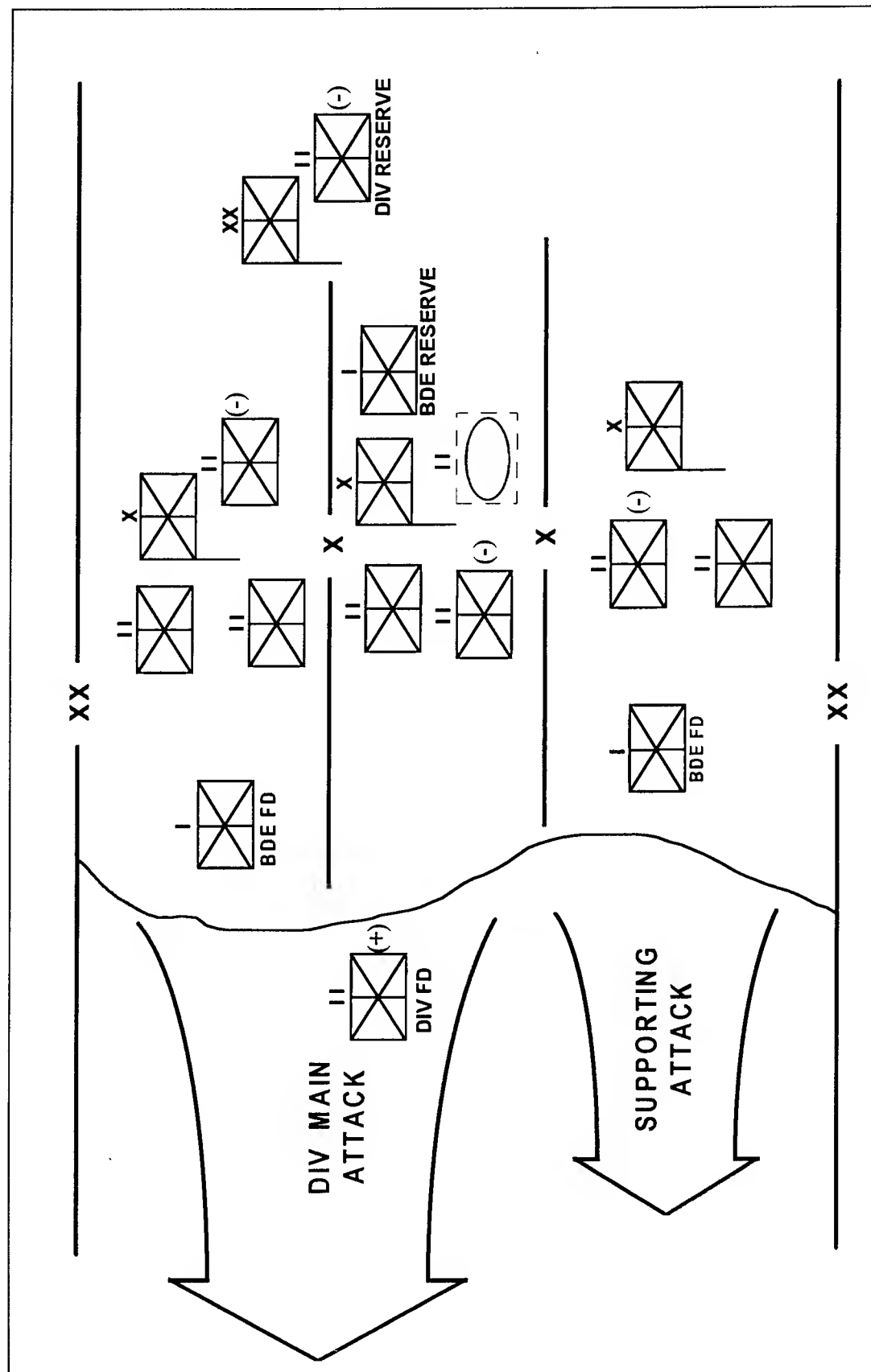
Figure 5-11. Division single-echelon formation (example).

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Figure 5-12. Division two-echelon formation (example).

5-16
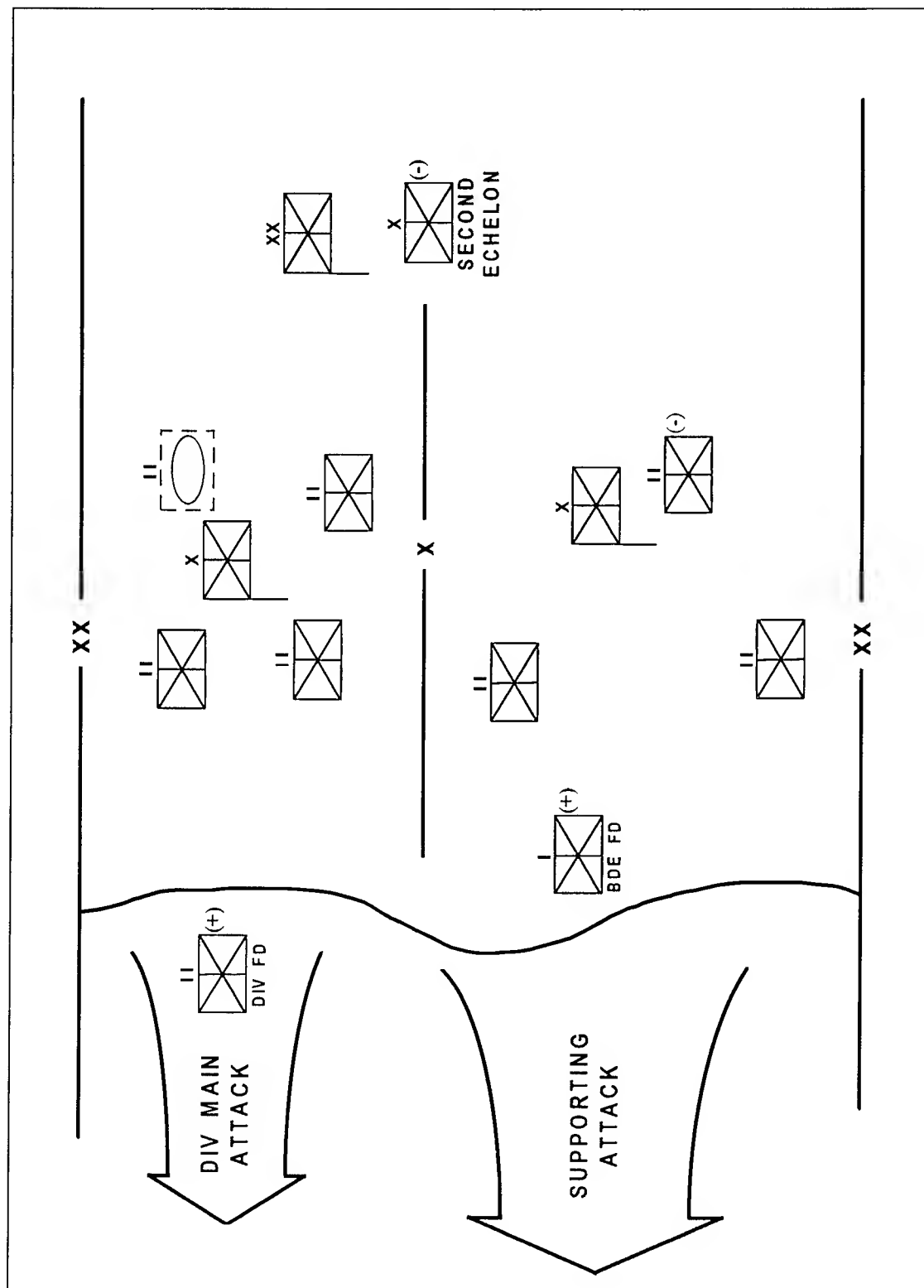
At the same time the commander issues missions to the first echelon, he assigns the second echelon a mission, route of advance, and a likely line and time for its commitment. Upon commitment, the second echelon normally passes through gaps or at the flanks to avoid a passage of lines and intermingling of forces. Specific second-echelon missions may include--

- Destroying bypassed enemy elements.
- Defeating a counterattack.
- Achieving the subsequent mission.
- Completing the missions of the partially successful first-echelon forces that are no longer combat ineffective.

Once the commander commits the second echelon, he forms a reserve from remnants of the first echelon. The remainder of the first echelon continues its attack to the degree that it is able.

Although the commander preplans deployment lines and time for committing the second echelon, he retains flexibility in implementing them, depending upon the progress of the battle. It is important to remember that a second echelon is an application of additional force, not a reinforcement for the first echelon. With the OPFOR view of only reinforcing success, the commander does not commit the second echelon to complete an unsuccessful portion of the first echelon's attack. However, the second echelon could be a replacement for a first echelon force that has been successful, but at the cost of its own combat effectiveness. The second echelon's attack may be on an axis different from the one originally planned for it. (Figure 5-17 illustrates the ways in which a brigade or division may commit its second-echelon forces.)

Reserves

Reserves fall into two categories: maneuver, and antitank.

Maneuver Reserve

Tactical commanders can form a maneuver reserve, but normally only if attacking in a single echelon. Initially, the commander does not give the reserve a mission. He does assign it a route and axis of advance. He holds it as a contingency force to meet unanticipated requirements, such as:

- Exploiting unforeseen success.
- Repelling counterattacks.
- Covering the flanks of the parent organization.

Ideally, he would commit the reserve to exploit success upon achievement of the formation's immediate mission.

Antitank Reserve

Tactical commanders use their organic antitank (AT) assets to form an AT reserve. The basic missions of the AT reserves are--

- To cover friendly units advancing to attack.
- To repel or block enemy tank attacks or counterattacks.
- To cover the deployment of the second echelon or maneuver reserve.
- To secure the flanks.

AT reserves provide a means to defeat armored threats without having to weaken an attack echelon. The antitank reserve moves with a mobile obstacle detachment (MOD). This combined force travels between the first and second echelons on the axis of the main attack. Planned commitment lines for the antitank reserve and MOD are across the most likely enemy counterattack routes. (See Chapter 8, Antitank Support.)

Artillery Support

OPFOR uses centralized fire planning. It integrates conventional artillery and air strikes, missile strikes, and possible chemical strikes. The fire plan includes details specifying the time of assignments, groupings, and displacement of artillery. Combat instructions specify the missions of designated artillery units and identify the location of observation posts and firing positions. The orders specify the time for artillery to be ready to fire.

Fire planning for the attack is methodical and highly quantitative. This reflects the need to determine ammunition requirements and to distribute planned fires effectively. The chief of artillery at division or brigade level must determine the availability of artillery and its organization. Then he weighs these against the numbers and types of targets and the commander's decision for coordinated action in the attack. He also allocates targets to artillery, tanks, aircraft, and chemical weapons. When time permits, he bases fire planning on thorough, detailed reconnaissance and careful study of the attack plan. In any attack, a systematic targeting effort underlies the fire plan at all levels.

Deployment

Artillery units are among the first combat forces to deploy. Artillery allocated by higher headquarters joins the designated attacking force in the assembly area or links up on the march. Artillery designated to support or reinforce the attack occupies firing positions early enough to cover the advance of the division several hours before the beginning of the attack. Artillery attached to maneuver brigades moves at or near the head of the brigade main body.

Phases

Fires in support of an attack follow a sequence of four phases:
- Fire support of the maneuver forward.
- Fire preparation of the attack.
- Fire support of the attack.
- Fire accompaniment.

For detailed information, see Chapter 7, Artillery Support.

Air Defense

The mission of tactical air defense is to prevent enemy air action from disrupting the actions of ground forces. It achieves this by destroying enemy aircraft or by forcing them to expend their ordnance before reaching their targets. Unless protected, ground forces engaged in an attack may be subject to intense air attack. As a result, the OPFOR allocates the bulk of its air defense units to maneuver units in areas where it anticipates the greatest air threat. Allocated air defense assets would join the supported unit to which attached in pre-attack assembly areas. They provide cover while in the assembly area, on the march, and during the attack.

Deployment

Deployment of air defense units supporting the offense depends on an assessment of the air threat, terrain, tempo of supported formations, and mobility of supporting systems. In the offense, the exact location of air defense weapons depends on the following factors:
- The mission of the supported unit.
- The commander's chosen attack formation.
- The terrain, fields of fire and observation.

Air defense assets normally deploy at distances of one-third to one-half their effective range behind the troops they support. They set up to provide interlocking and mutually supportive fields of fire. Spacing between air defense assets should reduce the likelihood of simultaneous destruction of an enemy aircraft.

Priorities

Priorities in deploying air defense assets are to protect command posts, then artillery groupings and first-echelon forces. Priority of air defense shifts to the second echelon or reserve forces upon their commitment. (See Chapter 10, Air Defense.)

Raiding Detachment

A raiding detachment is a highly mobile unit, usually a reinforced battalion. Its primary mission is to destroy or capture important military targets. Some examples are--

- An artillery battalion.
- A tactical missile battery.
- A fire support helicopter forward base.
- A supply base or depot.
- A river crossing site.

Its secondary missions can include seizing important terrain and blocking enemy reserves.

Like forward detachments, a raiding detachment also sends out its own reconnaissance elements and seeks to avoid contact enroute to its objective. Although its organization, movement methods, and objectives are similar to those of an FD, a raiding detachment differs in that it **usually, but not always,** rejoins its parent unit upon completion of its mission. Instead of rejoining its unit, a raiding detachment could receive a new offensive mission or defend the objective until the parent unit links up with it. Reinforced companies and platoons can also be raiding detachments.

Enveloping Detachment

An enveloping detachment is a unit whose mission is to penetrate through gaps in the enemy's defense, striking at enemy forces on their flanks or in their rear. The OPFOR stresses the importance of enveloping detachments in offensive battle in mountainous areas, where typical missions include seizing important terrain features. In mountains, an enveloping detachment often acts in coordination with a tactical airborne or heliborne landing; in coastal regions, it could cooperate with an amphibious landing. The OPFOR could also use it in conjunction with a high-precision weapon, or chemical strike.

TACTICAL FORMATIONS

Within each element of the combat formation, an attacking force can deploy into any of the three types of **tactical formation**-- march, prebattle, or battle--depending on its mission and the combat situation. The OPFOR employs a standard drill for deployment into battle. It can incorporate this drill in almost any form of attack, but this is most common in the attack from the march and the meeting battle. The drill proceeds from **march formation** (brigade and possibly battalion columns), through **prebattle formation** (battalion, company, and platoon columns), into **battle formation** (platoons deployed laterally). Tactical considerations and terrain determine the sequence of deployment and the distances of the lines of deployment from the enemy. Brigades, battalions, and smaller units transition back and forth between march, prebattle, and battle formation based on the combat situation, not on fixed doctrinal lines.

March Formation

The OPFOR prefers to remain in column or march formation as long as possible for the sake of speed. It resorts to lateral deployment only by necessity, such as when combat is imminent. Up to that point, the maneuvering force is in some form of tactical march formation. (For more detail, see Chapter 3, March.) Battalions and below march in a single column. Even a brigade typically marches in one column until subordinate units begin their deployment into prebattle formations. If terrain permits, a brigade might use two march routes from the onset.

Prebattle Formation

When nearing the enemy's defensive line, the OPFOR uses prebattle formation as a transition between the march and battle formations. Prebattle formation focuses on speed, dispersion, flexibility, and firepower in an anticipated direction. When entering prebattle formation, the OPFOR deploys into successively smaller unit columns. These multiple columns increase forward combat power until forces reach the assault position and assume the battle formation. In prebattle formation, the columns have greater lateral dispersion, but less depth than in the march formation.

Forward detachments and advance guards assume a prebattle formation when the chance of enemy contact increases or when they are about to attack an objective. Not every element in a division, brigade, or battalion assumes a prebattle formation at the same time. The main bodies of each respective element of the march remain in march formation until required to deploy into a prebattle formation. This applies to second-echelon forces as well.

Prebattle formation minimizes troop vulnerability to enemy artillery and air strikes as well as high-precision weapons. It allows for rapid maneuver and quick deployment into battle formation. By remaining in a column, the attacking unit maximizes its speed, presenting a minimum number of targets for the enemy's forward direct fire weapons systems. The disadvantage of remaining in columns is the unit's inability to use all of its own fire systems against enemy positions directly to its front. Forces in prebattle formation can either deploy into battle formation or return to march formation, depending on the tactical situation. A force might remain in prebattle formation for a lengthy period of time. It normally passes through some form of prebattle formation when moving from the march into full deployment for an attack.

Battle Formation

The OPFOR uses battle formation when encountering **strong enemy resistance** during--
- The meeting battle.
- The attack against a defending enemy.
- The pursuit.
- The counterattack.

Only those elements in contact with, or expecting immediate contact with, the enemy deploy into the battle formation.

TYPES OF OFFENSIVE ACTION

All levels conduct three basic forms of offensive combat action, all of which may occur in the course of the offensive. The OPFOR defines these in terms of the postures of the attacker and the defender. These are: the attack against a defending enemy, the meeting battle, and the pursuit. In all cases, the method of launching an attack must ensure concealment of its preparation and the delivery of surprise and powerful strikes against the enemy.

Attack Against Defending Enemy

At the tactical level, the attack against a defending enemy is the basic form of offensive combat. The commander bases his attack plan on available reconnaissance information on enemy deployment and terrain, and the mission assigned. An OPFOR commander attacks when the enemy is in a defensive position and he knows the enemy's location. It can occur in a variety of situations: envelopments, supporting attacks, penetrations of the enemy defense, and exploitation. There are two methods of conducting an attack against a defending enemy: **from the march** or **from positions in direct contact**. Figure 5-13 illustrates the difference between the two methods, using examples of a motorized infantry battalion performing each type of attack.

Attack from the March

The OPFOR sees two possible scenarios of the attack from the march, based on whether the enemy has an unprepared defense or a partially or fully prepared defense. In an attack on **unprepared defenses**, the brigades would in essence conduct a series of meeting battles. Motorized or mechanized infantry divisions could rapidly go deep to secure operational or strategic objectives. The OPFOR then brings in light infantry as occupying forces. In an attack on **partially or fully prepared defenses**, the OPFOR will attack, envelop, and destroy the bulk of the enemy force. Then it pursues until it completely destroys the enemy.
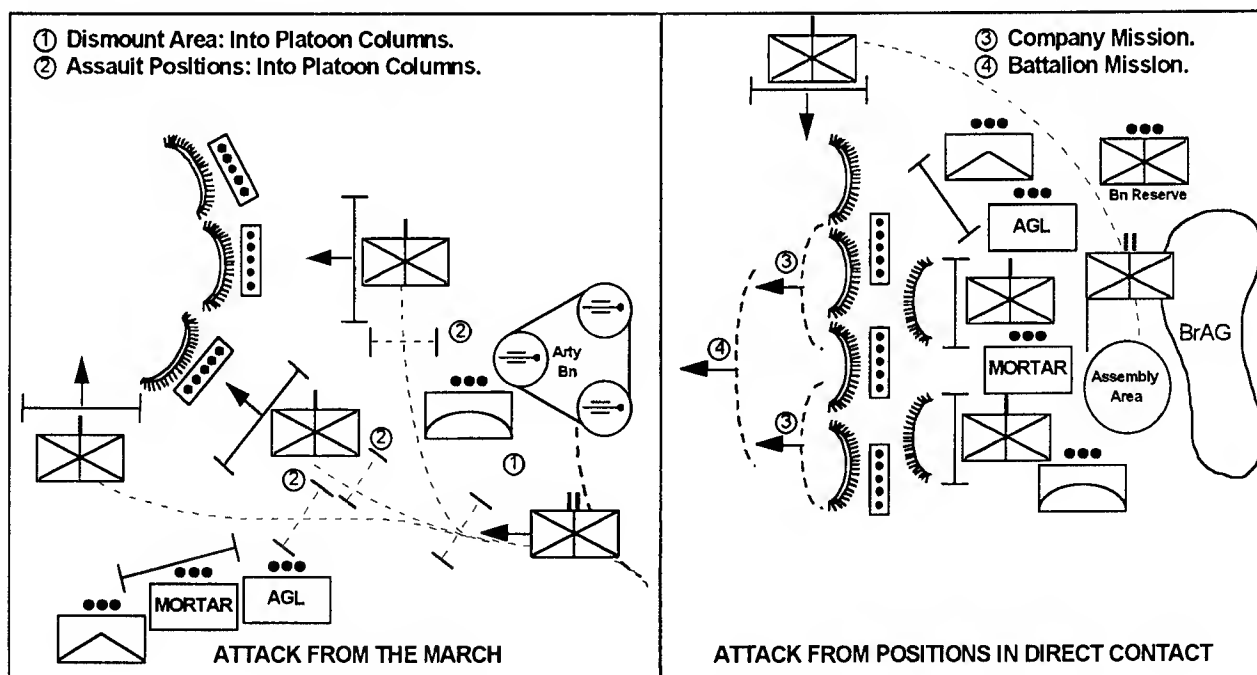
Figure 5-13. Attack against a defending enemy.

The attack from the march is the **preferred OPFOR method** of attacking a defending enemy. The attacking force is not in close contact with the enemy. It prepares for the attack in an assembly area, hidden from the enemy and out of range of his artillery. It moves out of the assembly area, toward the enemy, and deploys into battle formation preferably under cover of darkness, with artillery and air support, if available. This method of attack limits the enemy's capability to maneuver and helps achieve surprise.

The OPFOR sees these **advantages** in an attack from the march:

- It does not commit the unit before the attack.
- It increases the chance of surprise.
- It allows greater flexibility.
- It decreases the vulnerability to enemy artillery decreases.
- It enhances momentum.
- It allows preparation for combat to take place out of contact with the enemy.

The OPFOR realizes that an attack from the march also has **disadvantages**:

- Commanders may not be familiar with terrain and enemy dispositions.
- Coordination of fire, maneuver, and simultaneous actions is more difficult.

Attack from Positions in Direct Contact

The OPFOR launches an attack from positions in direct contact. Those positions may be part of or immediately behind defensive positions. It uses this action most often when changing over from the defense to the offense.

The OPFOR feels there are certain **advantages** from an attack from positions in direct contact:

- It allows more thorough study of terrain and enemy disposition.
- It permits more thorough planning and synchronization of assets.
- It facilitates coordination of fire and maneuver.

The OPFOR also recognizes **disadvantages** in using this type of attack:

- It may have already committed the unit.
- The unit is under threat of attack during preparation and is vulnerable to enemy observed fires.
- The unit has less chance of achieving surprise.
- The unit has less chance of building up momentum and of overcoming inertia.

Combination of Types of Attack

Obviously it is possible to combine the two types of attack against a defending enemy. After an unsuccessful first attack from the march, the OPFOR might try again, using first-echelon troops in an attack from a position of direct contact and new, second-echelon forces in an attack from the march.

Attack Zones and Strike Sectors

In the offense, each first-echelon unit has an overall sector of responsibility. The OPFOR calls this the **attack zone**. This is the unit's assigned zone of action or overall attack frontage. The width of the zone depends on a number of factors:

- The unit's mission (main attack, supporting attack, or fixing force).
- The relative strengths and combat power of friendly and enemy forces.
- The nature of the terrain.

- Weather conditions.
- Enemy disposition.
- The number of axes of advance for the OPFOR unit's first echelon.
- The presence of an air or high-precision weapon threat.

Within this assigned zone, the unit conducts offensive actions. **However, the unit commander does not distribute his forces evenly across the entire zone.** Instead, he designates main and secondary attack axes and possibly an axis for a fixing attack. In preparation for these attacks, he disperses his forces laterally and in depth, preferably in camouflaged assembly areas. At a designated time, forces then leave the assembly areas and conduct rapid marches along their assigned axes.

On the main attack axis, forces of one or two subordinate units converge on a particular portion of the enemy defenses, called the **strike sector**. This is the area the commander has chosen for a major penetration. (Hence, another name for it is "penetration sector.") The strike sector is much narrower than the attack zone. This allows the commander to concentrate superior combat power at this point of attack at the designated time. This concentration appears only during the actual penetration battle, when it is too late for the enemy to react effectively. If he has sufficient forces, the commander may also designate two strike sectors on separate axes to facilitate a double envelopment.

Figure 5-14 lists some of the average widths of attack zones and strike sectors. These frontages could apply to a main attack conducted with two echelons at battalion and above or in a single echelon at company and below. These numbers are no more than examples or a rule of thumb to illustrate the planning process. Actual frontages can vary considerably, as commanders consider the factors listed above. For example, a division could have an attack zone of about 15 km when conducting a supporting attack or 20 km or more, when acting as a fixing force.

Missions and Objectives

The OPFOR focuses more on the **destruction of enemy forces** than on key terrain when it assigns missions and objectives. In nonlinear combat and deep battle, OPFOR commanders may give subordinates **objectives** in the graphic form of "goose eggs." Unlike his U.S. counterpart, however, the commander does not place this nonlinear objective on key terrain, but rather on the area occupied by a particular enemy force.

	Attack Zone	Strike Sector
Division	6-10 km	2-3 km
Brigade	2-3 km	1-1.5 km
Battalion	1-1.5 km	500-750 m
Company	500-750 m	150-200 m
Platoon	150-200 m	50-100 m

Figure 5-14. Typical attack zone and strike sector widths.

In combat that is basically linear, OPFOR commanders assign their subordinates immediate and subsequent **missions**, in terms of the rear boundary of an enemy force they are to destroy. The immediate mission involves the destruction of the enemy's main forces and seizure of a line that the OPFOR can use to start an exploitation and begin completing the destruction of the enemy. The subsequent mission should result in the complete destruction of the enemy force, including his reserves, and it should include the seizure of another specified line deep in the enemy rear. The depth of the immediate or subsequent mission depends on a number of factors, the numerical strength and combat capabilities of both OPFOR and enemy forces, their assigned mission, and the terrain. One of the most significant factors is the level of preparedness of the enemy's defense.

At the tactical level, **each organization's immediate mission corresponds to its subordinate's subsequent mission.** The commander assigns **second-echelon** units missions and subsequent directions of advance instead of subsequent missions. These directions of advance support the parent unit's subsequent mission.

Enemy Preparedness

To the OPFOR, any defense with no more than 5 to 6 hours' preparation is **unprepared**, since the enemy has had time to emplace only part of his covering force. In the first 5 to 6 hours, the enemy probably has only prepared basic primary fighting positions for individual soldiers, crew-served weapons, fighting vehicles, and artillery. The OPFOR defines a **fully prepared** defense as one with over 48 hours of preparation, with all defenses in place and fully engineered. This can include--

- Completion of trench lines (including communications trenches).

- Construction of overhead cover for portions of the trench line, especially for weapons positions.
- Improving primary fighting positions for vehicles and artillery (normally by the units themselves, rather than engineers).
- Construction of alternate fighting positions.

The OPFOR considers anything in between these two extremes as **partially prepared**.

While the OPFOR would prefer to attack an unprepared defense, it realizes that such opportunities will probably be rare. Likewise, it does not expect routinely to encounter and have to attack fully prepared positions. Therefore, under what the OPFOR considers "**normal**" conditions, it expects to surprise the enemy in a **partially prepared defense**. These are the conditions under which it hopes to conduct the majority of its attacks. In exceptional cases, the OPFOR may have to attack under less likely and less favorable circumstances. When it must attack a well-prepared enemy, it would have to reduce the depth of assigned missions.

The OPFOR closely ties its missions to the ratio of forces in the attack zone and the strike sector. This makes it possible to express their mission depth in terms of enemy deployments, rather than a fixed number of kilometers. For example, the immediate mission of a first-echelon battalion attacking through a **fully prepared** (heavily engineered defense) is the rear of an enemy first-echelon company. Its subsequent mission is the enemy first-echelon battalion's rear boundary. Against a **partially prepared** enemy defense, the normal immediate mission of an attacking battalion is the enemy battalion rear, and its subsequent mission is the rear of the enemy brigade reserve. This should also be the attacking brigade's immediate mission. Since these are **guidelines**, commanders **may modify** them in light of the density and quality of the defense.

These planning factors are common to both forms of attack against a defending enemy. Figure 5-15 illustrates the depth of immediate and subsequent missions an OPFOR commander may assign when attacking a extraregional power with a partially prepared enemy defense. Figure 5-16 illustrates the missions he might assign when attacking a regional power with a partially prepared defense.

Linear Missions

An OPFOR commander usually assigns a subordinate a **mission** that he graphically represents by a line. This line often corresponds to the rear boundary of an enemy unit. The mission includes two elements: **destruction of the enemy within a zone** and **seizure of the assigned line**. The subordinate must achieve both of these by a specified time. This kind of mission is most common when combat is basically linear.

Subsequent Direction of Advance

An OPFOR commander can assign a **subsequent direction of advance** to a subordinate, either in addition to or instead of a subsequent mission. This assignment depends on the size and function of the subordinate's force. The subordinate will follow this direction to assist in achieving his superior's subsequent mission. By setting the direction of further advance, the commander ensures his subordinates maintain a high tempo of advance.

Nonlinear Objectives

In nonlinear combat and deep battle, commanders may give subordinates **objectives** in the graphic form of "goose eggs." The commander normally selects the objectives on the basis of force-orientation, rather than terrain-orientation. Commanders usually commit their second echelons against linear missions, whereas they commit their reserves against nonlinear objectives. Forward detachments and heliborne or amphibious landings usually have nonlinear objectives.

Continuation of Attack

After accomplishing the assigned mission or objective, the attacking force continues its attack as long as it remains combat effective. The OPFOR commander could consider a temporary halt to the offensive, to reorganize his force, when his combat potential drops to 60 percent. Historically, however, OPFOR commanders have continued to fight the offense at 45 percent strength and defensively at 20 percent. The surviving enemy combat potential is a large determinant of whether or not the OPFOR commander can continue the mission, in its present form. It also depends on the length of time over which losses have occurred.

First-echelon units that have accomplished their original immediate and subsequent missions and are still combat effective may receive new missions. In this case, however, they would receive only one (immediate) mission and a subsequent direction of advance.

Commitment of Second Echelon or Reserve

Behind his first-echelon forces, the OPFOR commander may have one or two types of follow-on forces: a second echelon or a maneuver reserve. He plans to commit these forces **upon achievement of the unit's immediate mission**. This commitment must take place before the momentum of the advance decreases. The commitment of the second echelon or reserve involves the intensification of reconnaissance activity, artillery fire, air strikes, and the use of smoke to screen the force from enemy observation. Figure 5-17 illustrates this process.
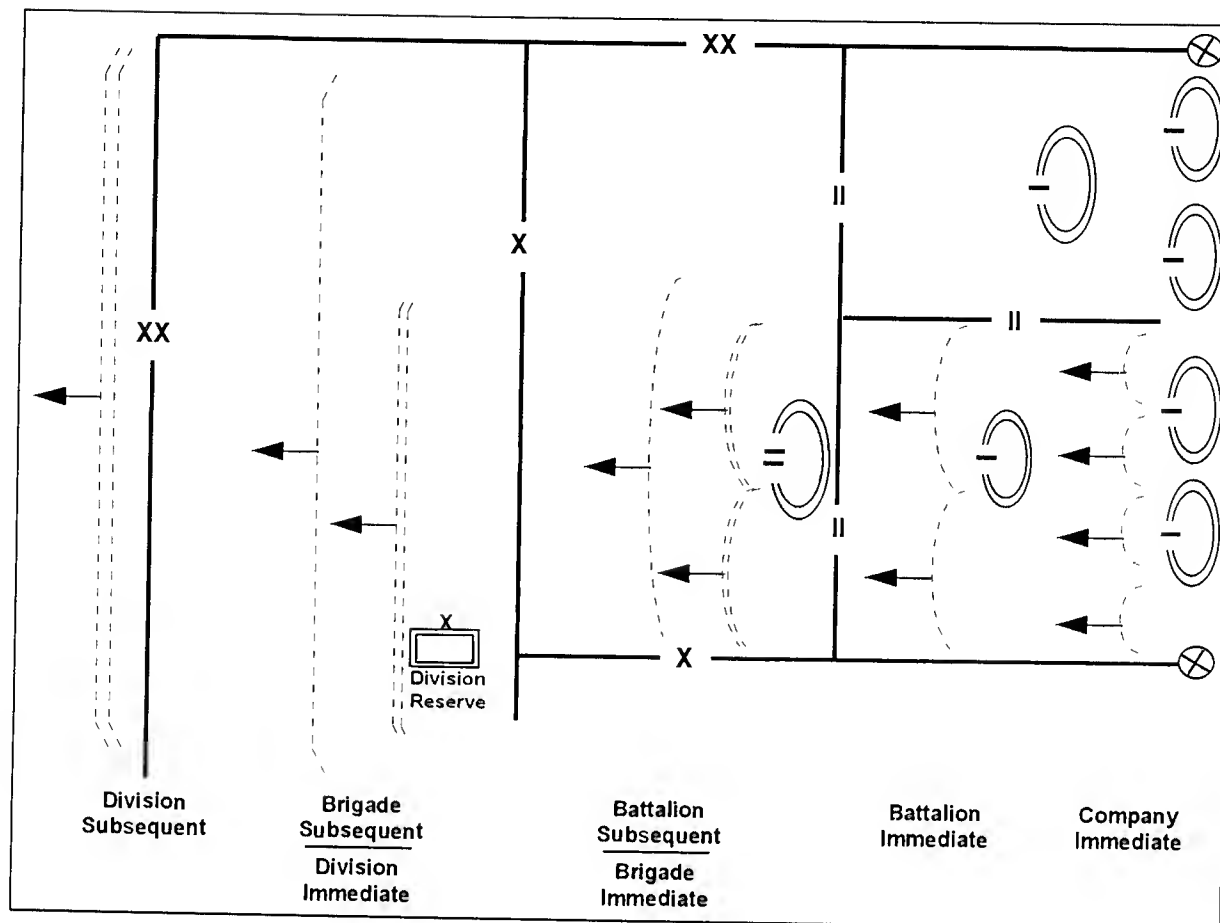
OPFOR First Echelon	Immediate	Subsequent	
	Destroy/Take Positions of	Complete Destruction of	Destroy/Take Positions of
DIVISION (Day 2-4)	Rear of Division	Rear of Division	Corps
DIVISION (Day 1)	Reserve Brigade of Division	Reserve Brigade of Division	Rear of Division
BRIGADE	Rear of 1st-Echelon Brigade	Rear of 1st-Echelon Brigade	Reserve Brigade of Division
BATTALION	Rear of 1st-Echelon Battalion	Rear of 1st-Echelon Battalion	Rear of 1st-Echelon Brigade
COMPANY	Rear of 1st-Echelon Company	Direction of Advance (Toward Battalion Immediate Mission)	
PLATOON	Rear of 1st-Echelon Platoon	Direction of Advance (Toward Company Immediate Mission)	

Figure 5-15. Probable mission depths against extra-regional
power with partially prepared defense.

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	Immediate	Subsequent	
	Destroy Integrity & Cohesion of/Capture	Complete Destruction of/Capture	Destroy Integrity & Cohesion of/Capture
DIVISION (Day 2-4)	District Capital	District Capital	Region 2d Echelon or Reserve
DIVISION (Day 1)	District Reserve	District Reserve	District Capital
BRIGADE	Rear of 1st-Echelon Brigade	Rear of 1st-Echelon Brigade	1st-Echelon Brigade Reserve
BATTALION	Rear of 1st-Echelon Battalion	Rear of 1st-Echelon Battalion	Rear of 1st-Echelon Brigade
COMPANY	Rear of 1st-Echelon Company	Direction of Advance (Toward Battalion Immediate Mission)	
PLATOON	Rear of 1st-Echelon Platoon	Direction of Advance (Toward Company Immediate Mission)	

Figure 5-16. Probable mission depths and objectives against regional power with partially prepared defense.

Before their commitment, second-echelon or reserve units advance in march or prebattle formation to the rear of the first echelon. The distance varies with the situation. The commander keeps second-echelon or reserve forces far enough forward to timely influence the battle. Their placement is far enough to the rear to protect them from the bulk of enemy direct fire and direct support weapons.

Although the commander preplans the time and possible lines for commitment of the second echelon, he retains flexibility in implementing them, depending upon the progress of the battle. It is important to remember that a second echelon is an application of additional force, not a reinforcement for the first echelon. The OPFOR may encounter enemy defenses that are stronger than it had anticipated. If it cannot penetrate them with the first echelon, it may commit second-echelon or reserve forces earlier than it had planned. The OPFOR would not use the second echelon to reinforce failure but seek to employ it on another, more favorable axis. If, however, first-echelon forces succeed in penetrating enemy forward defenses and are able to

continue toward deeper missions, the OPFOR commander may not commit second-echelon or reserve forces until much later in the battle.

A second-echelon or reserve converges in **march columns** toward the penetration. The second echelon or reserve assumes prebattle formation or, if required by enemy actions, it assumes battle formation. Ideally, it passes through developed penetrations to drive swiftly into the enemy rear to achieve deep missions.

Once the commander commits the original follow-on force, he must establish a reserve from first-echelon forces or uncommitted combat assets. He attacks any surviving pockets of resistance with elements of the original follow-on forces or destroys them with concentrated fires of artillery and any allocated aviation, including attack helicopters.
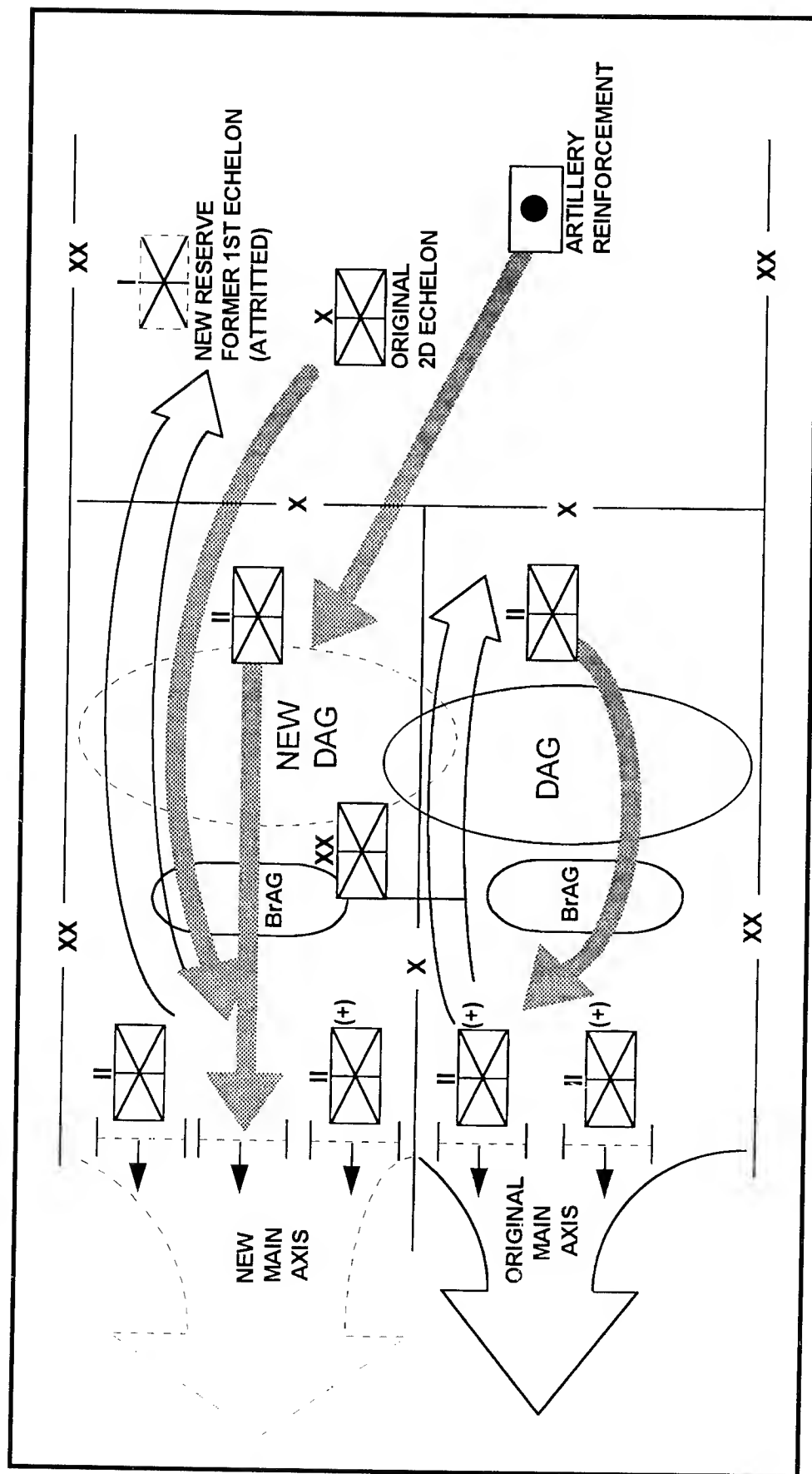
Figure 5-17. Commitment of second-echelon forces.

5-28

MEETING BATTLE

The OPFOR defines a **meeting battle** as an encounter between opposing sides both trying to fulfill their mission by offensive action. Figure 5-18 illustrates the circumstances under which a meeting battle may occur--

- When enemy forces are deploying forward.
- When the OPFOR encounters an enemy counterattack.
- When the OPFOR develops the attack into the depths of the enemy's tactical zone.
- During a pursuit.

The meeting battle is the basic form of offense used to meet, destroy enemy forces, and continue developing the offensive. The following conditions and requirements characterize meeting battles:

Both sides are attacking from the march, leading to a close-quarter battle in which speed and surprise are the crucial factors. There is an intense struggle to seize the initiative, with each side trying to impose its will through offensive action. Only a commitment to the offensive ensures that most of the surprises happen to the enemy. Victory goes to the side that attacks first and builds up its combat power in the decisive area fastest. Thus, there is a premium on simple deployment drills.

The battle is one of maneuver, with both sides accepting open flanks and gaps in their deployment as the action spreads over a wide area. Since neither side enjoys the advantage of having chosen and prepared the ground, the side that maneuvers boldly has an improved prospect of winning. For most or all of the time, the situation remains fluid and obscure. Commanders cannot always wait until the situation is clear, but should attack vigorously into the gaps and flanks of the enemy deployment. Given that there may be sudden and dramatic developments, the OPFOR needs special reserves and, in particular, antitank reserves to meet the unexpected.

Meeting battles are decisive. The defeated side, outflanked and penetrated deeply from the front, with no prepared positions to fall back on, will find it difficult to go over to the defensive or withdraw. His force may very well cease to exist as a coherent combat grouping.

Planning

The OPFOR does not look upon the meeting battle as a purely chance occurrence. It trains commanders to anticipate such a battle, to identify a likely point of contact, to choose advantageous terrain, and to take the initiative. Figure 5-19 lists the phases of the meeting battle and the tasks the OPFOR associates with each element. The commander anticipating a meeting battle must consider the following factors in his planning and decision making:

- Continuous and thorough reconnaissance from all available assets and the correct interpretation and use of reconnaissance information furnished from higher levels.
- The requirement for speed in decision making and transmitting of decisions.
- Anticipation of enemy air and artillery strikes, and using that information in gaining fire superiority.
- Seizure of the initiative through immediately responsive deployment of maneuver forces.
- Adequate flank and rear security.

BEGINNING OF A WAR

Could also occur at the outset of any attack when the two sides are not in initial contact, and both assume the offensive.

AFTER PENETRATION OF ENEMY'S FORWARD DEFENSE

Would involve the penetrating force meeting the defender's advancing reserve elements.

DURING PURSUIT

Meeting battle likely during counterattack by either side.

DURING COUNTERATTACK

Strong possibility that the enemy could meet the counterattacking force head-on or from the flanks by the enemy.

Figure. 5-18. Circumstances under which a meeting battle may occur.

5-30

PHASE	ELEMENT IN MARCH	BASIC TASK	ACTIONS ON CONTACT
Initial Phase	Reconnaissance Patrols and Groups, including Combat Reconnaissance Patrols (CRP)	Obtain data on enemy disposition and terrain along main routes of advance.	• Disengage when possible. • Report and/or continuously monitor the situation. • Bypass enemy, continue to penetrate enemy positions. • In favorable conditions (or out of necessity), may attack advancing units, take prisoners, disorganize or disrupt enemy forces, and destroy enemy nuclear and high-precision weapons and C^2 systems.
	Forward Detachment	Seize key terrain to facilitate the advance of the main body. May conduct raids en route to objective against key targets (nuclear and high-precision weapon systems, C^2 centers)	• Avoids contact as much as possible, moving rapidly to its objective. • If necessary, conducts meeting battles like a battalion acting as an advance guard.
	Advance Guard, including Forward Security Element (FSE)	Move along route of main body to ensure uninterrupted advance of main body, overcoming enemy security and reconnaissance forces and obstacles.	• Reports enemy contact and disruption. • FSE deploys and attempts to overcome enemy force based on information from CRP(s). • If the FSE is not able to overcome the enemy, it assumes a defensive cover position to support maneuver of main body of advance guard. • Main body of advance guard attempts a close envelopment or double envelopment to defeat the enemy unless his force is overwhelming in size. • If successful, units reform and resume march or initiate pursuit. • If unsuccessful, units hold positions or block enemy and continue attacking to support the subsequent maneuver and attack of the main body of the parent unit.
Actions of Main Body	Main Body	Deploy rapidly for the attack and defeat of the enemy, generally from the flanks.	• Based on information from forward elements, commander maneuvers his forces and attempts to envelop. • Units march rapidly to assigned sectors and deploy in prebattle or battle formations as needed to assault enemy forces.
Conclusion	Main Body	Develop the attack into the depths of the enemy rear.	• If enemy withdraws, it initiates pursuit. • If it decisively defeats the enemy, it resumes direction of march and overall mission. • If it does not defeat the enemy, it continues to develop the attack and holds positions aggressively until higher headquarters can conduct its maneuver. • If it is unsuccessful, it may go over to the defense in the course of the offense.

Figure 5-19. Phases of meeting battle.

The **initial phase** of the meeting battle is the period of combat that starts when the leading advance guard element encounters the enemy and ends with the commitment of the main body. Employment of the main body depends on the success of the advance guard. If the advance guard is successful, attack by its subelements destroys the enemy force, the advance guard resumes the march, and the main body never deploys. If the advance guard is not initially successful, however, it would attempt to fix the enemy force. The **main body** would then deploy to destroy the enemy force, using one of two forms of maneuver: an envelopment or a frontal attack. The envelopment is the preferred form of maneuver. The meeting battle **concludes** when one of the following occurs:

- Continuation of the march, due to defeat of the enemy force.
- A transition to the pursuit, if the enemy withdraws.
- A transition to the defense, if the OPFOR is unable to overcome the enemy force.

Actions Upon Contact

Commanders at all levels must know their higher commander's intent and concept for actions on contact so that no time is lost waiting for orders. (See Figure 5-20.) These meeting battles often occur in small-unit combat and where reconnaissance has been ineffective. Aggressive offensive actions characterize meeting battles. The advance guard pushes back or destroys small enemy units before the enemy can hinder the advance of the main body. When the advance guard encounters large enemy forces or heavily defended areas, it acts quickly and aggressively to develop the situation and, within its capability, to defeat the enemy. Available combat power might be insufficient to

eliminate the enemy. The advance guard can then identify enemy dispositions and contain the enemy forces until the commitment of the main body elements. The brigade commander must decide whether to order the advance guard to destroy the enemy or continue the movement. He can order a battalion from the main body to fix the force and bypass with the rest of the brigade. Conversely, he can order the battalion to conduct an attack as part of the entire brigade. If the brigade cannot overcome or bypass the enemy, the brigade commander can conduct a defense while the division commander develops the situation.

PURSUIT

The OPFOR defines **pursuit** as a type of offensive action conducted against a withdrawing enemy. The goal of the pursuit is to complete the destruction of the enemy. OPFOR doctrine stresses that it can only achieve a decisive defeat of an enemy force by vigorous and continuous exploitation of tactical advantages. The OPFOR considers pursuit one of the principal forms of exploitation. Exploitation is the development of the attack into the tactical and operational depth of the enemy. The OPFOR executes the pursuit by blocking the enemy's withdrawal routes and destroying the enemy in a series of attacks. The pursuit phase begins when the enemy attempts to break contact and withdraws. The pursuit may end--

- When the pursuing units have destroyed the enemy forces.
- When pursuing elements outdistance their support and are in danger of being cut off.
- When the enemy successfully establishes a strong defensive position.
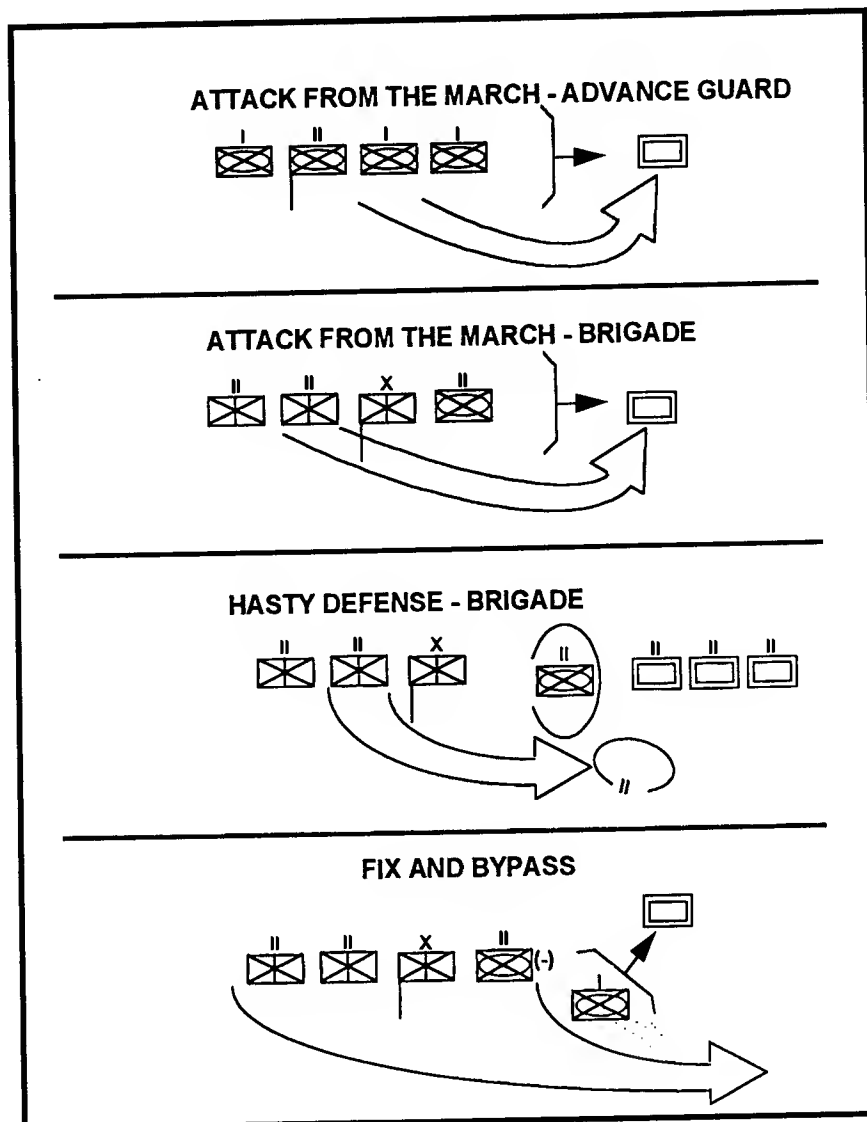
Figure 5-20. Actions upon contact.

Pursuit offers swift and deep movements of forces to strike the enemy's most vulnerable areas. The basic requirements for a successful pursuit include planning and organization, detection of withdrawal, and maintenance of high tempo. An enemy can withdraw as a result of a meeting battle, or after a penetration of his defensive position. An enemy may deliberately withdraw when threatened with envelopment, making a redistribution of forces, or attempting to draw the OPFOR into an engagement area (kill zone).

Planning

An OPFOR commander anticipates an enemy withdrawal when he plans his offensive. His tentative planning for pursuit is part of the initial attack plan. The amount of detail that the commander includes in such planning depends on the anticipated actions of the enemy, the combat formation of attacking troops, and the amount of planning time available. He must also consider—

- Possible enemy routes of withdrawal.
- The scheme of maneuver.

- Availability and condition of pursuit routes.
- Forces available.
- Critical terrain features.
- The use of forward detachments and heliborne landing forces.
- Allocation of high-precision weapons and aviation support.
- Combat support and combat service support resources.

At the first indication of an enemy withdrawal, the OPFOR expects the commander at any level to initiate the pursuit without waiting for orders from higher headquarters. This helps ensure that the OPFOR does not allow the enemy to break contact and to conduct an orderly withdrawal. Even though a lower-level commander can make the decision to initiate a pursuit, he must inform his higher commander that he is doing so. Then he can terminate the pursuit only on the order of the higher commander.

To detect enemy withdrawal, the commander relies on active reconnaissance, an understanding of enemy tactics, and knowledge of the current tactical situation. He must pay special attention to the following signs of enemy preparation for withdrawal:

- Increased movement to the rear, especially artillery and reserves.
- Increased fires in individual sectors of the forward edge.

- Conduct of heavy fire concentrations in separate areas, not in accord with the developing situation. These concentrations may occur at a time when there appears to be a general reduction of fires.
- Intensified reconnaissance.
- Preparations for demolition and/or destruction of facilities, installations, and equipment.
- Limited local counterattacks.

Forms

The three basic forms of pursuit are **frontal**, **parallel**, and **combination**. The most effective is the combination of the frontal and the parallel.

Frontal

Units in contact conduct the frontal pursuit. It is the most likely type of pursuit under the following conditions:

- At the beginning of the enemy's withdrawal.
- In limited visibility.
- When there are no parallel bypass routes.
- When strong pressure is necessary to keep the enemy from disengaging from combat.

The aim is to force the enemy to accept combat under unfavorable circumstances and delay his withdrawal. (See Figure 5-21.)
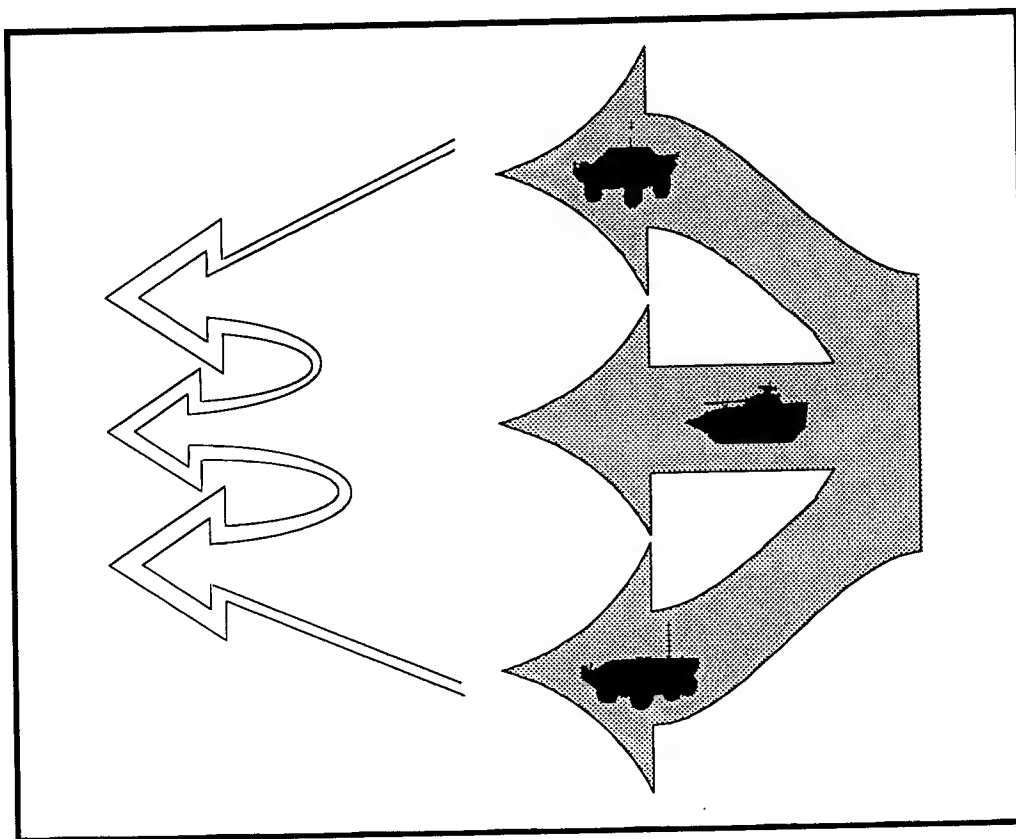
Figure 5-21. Frontal pursuit.

Parallel

Using an axis parallel to the withdrawing enemy, the pursuing force can move rapidly in march formation to overtake the enemy. Then it can execute a deep and/or close envelopment. However, the use of a parallel pursuit alone risks loss of contact with the enemy. (See Figure 5-22.)
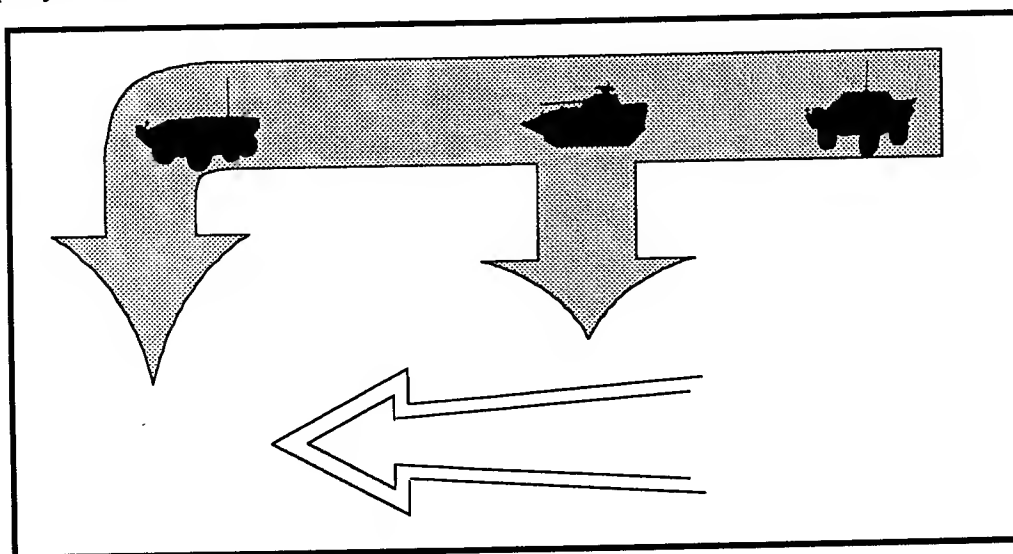
Figure 5-22. Parallel pursuit.

Combination

The combination pursuit combines the frontal and parallel methods. This maintains a high rate of advance with constant pressure. It hinders disengagement, leads to flank attacks, and cuts the enemy's withdrawal routes. (See Figure 5-23.) The preferred technique is the combination method. Using this variant, a small force pursues the enemy along his withdrawal route, attempting to prevent an orderly withdrawal. At the same time, exploitation forces move along parallel routes and attempt to block the path of the withdrawing enemy. The OPFOR may also insert heliborne or airborne forces to block the enemy's withdrawal.
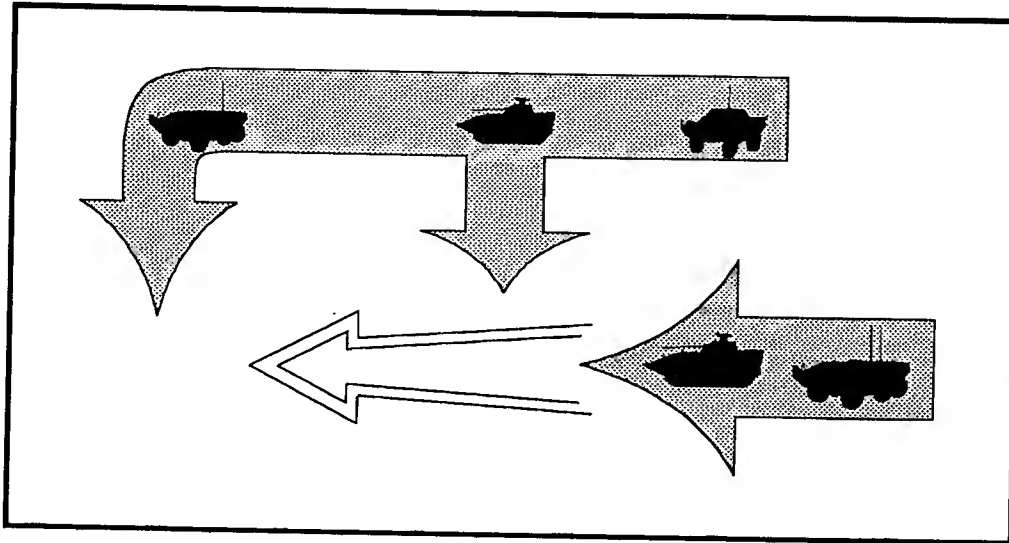
Figure 5-23. Combination pursuit.

Section II. Division and Brigade

A division or separate brigade normally conducts an attack as part of its parent unit's offensive. The organization, concept, and conduct of an OPFOR division attack vary with the division's mission and the commander's estimate of the situation. Achievement of the organization's mission is the culmination of fires and attacks by all its organic and attached elements. Figure 5-24 shows an example of a typical deployment of divisional elements in an attack. The sequence of action in the basic concept for an attack against a defending enemy is:

- To strike enemy defenses with intensive fires.
- To find or create a gap.
- To slip through the gap.
- To drive deep at top speed.

A divisional brigade is capable of limited independent action, but normally attacks as part of a parent division. The unit receives an immediate mission, a subsequent mission, and a direction of further advance. The same applies to a separate brigade.

ELEMENTS OF COMBAT FORMATION

The division and brigade combat formations are quite flexible. The combat formation may include--

- Reconnaissance.
- A forward detachment.
- One or two echelons.
- Reserves.
- Artillery groups.

See the general discussion of these elements of combat formation in Section I.

Reconnaissance

Each maneuver division has an organic reconnaissance and electronic combat (EC) battalion, each divisional brigade has a reconnaissance platoon, and each separate brigade has an organic reconnaissance company. (See Chapter 4, Reconnaissance, for deployment and missions.)

Element	Deployment
Division First Echelon	Concentrated to attack on main and supporting axes.
Division Second Echelon or Reserve	Moves by bounds 15-30 km behind the first echelon until committed.
Brigade Artillery Groups	1 to 4 km from the forward edge.
Division Artillery Group	3 to 6 km from the forward edge.
Division Antitank Reserve	Between first and second echelons on the axis of the main attack or a threatened flank.
Division Main CP	Up to 15 km from the forward edge.
Division COP	Up to 5 km from the forward edge.
Division Rear CP	Up to 30 km from the forward edge and located near the rear service elements.
Brigade Main CPs	Up to 5 km from the forward edge.
Logistics Units	The divisional medical, repair, and evacuation elements move behind the first echelon. The rest of the divisional logistics units move 5 to 10 km behind the second echelon.

Figure 5-24. Deployment of divisional elements in an attack.

Forward Detachment

A division can dispatch an FD of reinforced battalion size on a swift, independent penetration into the enemy depths. A brigade could do the same with a company-sized FD. See the discussion in Section I for the missions and roles of the FD.

Echelons

The maneuver commander determines the echelonment of his forces based on his assigned mission and the preparedness and depth of the enemy's defenses. A division normally attacks with most of its combat power in **one or two echelons**, but a three-echelon formation is possible in restrictive terrain. Within the division, the pattern of echelonment can vary at different levels of command. A division might deploy its brigades in two echelons, but these brigades, and battalions may use one echelon. See Figures 5-11 and 5-12 for examples of various types of echelonment within divisions and brigades.

Single-Echelon Formation

When attacking defenses that are weak, lacking in depth, or not well prepared, divisions and below normally deploy in a single-echelon formation. If the division attacks in a single echelon, it normally forms a reserve. The OPFOR would also use a single-echelon formation when attacking on a secondary axis. (See Figure 5-11 for an example.)

Two-Echelon Formation

On a **main axis** or **against better prepared defense**, a division or brigade normally deploys in **two echelons**. If the higher headquarters allocates a tank battalion to division or if it has one organic, the division com-

mander may allocate the tank battalion to a first-echelon brigade that will conduct the main attack. The motorized infantry brigade commander may in turn allocate a tank company to each of his first-echelon battalions. If the brigade has only two infantry battalions in its first echelon, the brigade commander can allocate a tank company to each first-echelon battalion with the third company and battalion headquarters remaining directly subordinate to the brigade commander, or perhaps allocated to the second-echelon infantry battalion. Alternatively, he may allocate two tank companies to the first-echelon battalion conducting the main attack and one tank company to the first-echelon battalion conducting the supporting attack. The brigade commander may choose to keep the tank battalion intact using it as part of his first echelon, or as part of the second echelon.

The commander may elect to commit the second echelon on an alternate axis. (See Figure 5-17 above.) Before commitment, it advances on multiple axes at the rear of the first echelon where it is close enough for ready commitment. Yet, the second echelon locates far enough away to protect it from the enemy's direct and indirect fire systems.

Reserves

The division or brigade commander may form various types of reserves. There are two basic types: maneuver and antitank.

Maneuver Reserve

Divisions and brigades can form a maneuver reserve, but normally only if attacking in a single echelon. The rule of thumb for the size of the OPFOR reserve is that the reserve is normally one-ninth of the commander's force or down two levels of command. This division normally forms a

battalion-sized reserve. A brigade normally forms a company-sized reserve. Depending on the situation, the commander may choose to form a smaller or larger reserve. If a division includes a tank battalion, the division commander may use that battalion as his reserve, or he may attach it to an infantry brigade on his main axis. The brigade commander, in turn, could use the allocated tank unit as his own reserve.

The main difference between a second-echelon force and a maneuver reserve is that the former has an assigned mission while the latter does not. The reserve exploits developed or developing success, reacting to contingencies.

Antitank Reserve

In motorized infantry divisions and separate brigades, the antitank guided missile (ATGM) battery usually forms the AT reserve. To form their own AT reserve, divisional motorized infantry brigades have an ATGM platoon. The maneuver commander may also reinforce his AT reserve with engineers and tanks, if available. (See Chapter 8 for further details.)

Artillery Groups

In highly mobile, fluid battles, higher commanders may allocate a significant proportion of the available artillery down to lower commanders. With organic and allocated artillery, tactical commanders form division artillery groups (DAGs), and brigade artillery groups (BrAGs). On rare occasions, individual maneuver battalions may also receive up to a battalion of artillery in an attached or supporting role. The motorized infantry division contains an organic towed howitzer regiment. A separate brigade has an organic towed howitzer battalion as well as a mortar battery. The divisional brigade only has a mortar battalion. The division chief of artillery ensures that the division's fire plan coordinates the fire support from all organic and reinforcing artillery assets available to the division and its subordinates. (See Chapter 7, Artillery Support.)

TACTICAL FORMATIONS

While both divisions and brigades have march formations, only brigades have a prebattle formation. Neither have battle formations.

March Formation

A division marches on two to four routes. On normal terrain, a brigade advances on one route until its subordinate units begin their deployment into prebattle formations. (See Chapter 3 for more detail on division and brigade march.) March formation helps maintain the speed of advance, allowing rapid maneuver and subsequent employment.

Prebattle Formation

The brigade assumes a prebattle formation by deploying laterally from a single brigade column of battalions into **individual battalion columns**. The number of battalion columns depends on the tactical situation and the choice of echelonment that the situation dictates. Deployment into battalion columns should begin beyond the range of the bulk of the enemy's artillery. The artillery preparation of the attack usually begins as the attacking force starts this deployment.

ATTACK AGAINST A DEFENDING ENEMY

The following paragraphs focus on brigade actions in the two types of attack against a defending enemy. For the brigade's role in a meeting battle or pursuit, see Section I of this chapter.

Attack from the March

In an attack from the march, the brigade advances out of assembly areas placed out of range of the majority of enemy indirect fire assets. This movement takes place during the fire support of the movement forward or fire preparation phases of artillery support. Subordinate units deploy into successively smaller march columns. Figure 5-25 shows an example of brigade deployment in an attack from the march. This particular example includes tank and artillery reinforcements from division level.

The brigade can conduct the attack in company columns. This facilitates speed and control if it has encountered poorly prepared enemy defenses, or if it has neutralized defenses sufficiently with fire. The OPFOR deploys laterally only when necessary. Therefore, the companies remain in prebattle or march formation if they encounter only light enemy resistance. The companies deploy into battle formation against well-prepared enemy positions. Battle formation provides the maximum firepower forward and a company assumes it upon reaching a designated assault position. Figures 5-26 and 5-27 illustrate this process, using two variations of a motorized infantry battalion deploying for an attack from the march. Ideally, all first-echelon companies of a brigade attack simultaneously, but this is not necessarily the case.

Attack from Positions in Direct Contact

The battalions of a first-echelon brigade or separate brigade can conduct an attack from positions in direct contact with the enemy. In this case, the brigade directs its first-echelon battalions to occupy assembly areas just behind the their own forward defensive positions with a portion of their forces. Unit boundaries adjust to concentrate fires and maneuver for the attack. Elements remaining in direct contact support the attack with direct fire. Artillery preparatory fires support the battalions moving from the assembly areas and the brigade's second-echelon battalion or reserve as it deploys to the final coordination line for the assault on the enemy defenses.

When first-echelon battalions of a first-echelon brigade have achieved a major penetration, they widen the area of penetration and secure the gap for exploitation by second-echelon forces. If they are still able, first-echelon battalions continue the attack into the enemy depth. Battalions revert to prebattle formation and advance rapidly to prevent the enemy from deploying his reserves and organizing a defense in new positions.

The first-echelon brigade also could form a company-sized FD to move ahead of the brigade to seize important objectives in depth. Such actions often take place in coordination with heliborne forces. (Alternatively, if the division commander has planned the use of his own battalion-sized FD, he may commit it at this time.)
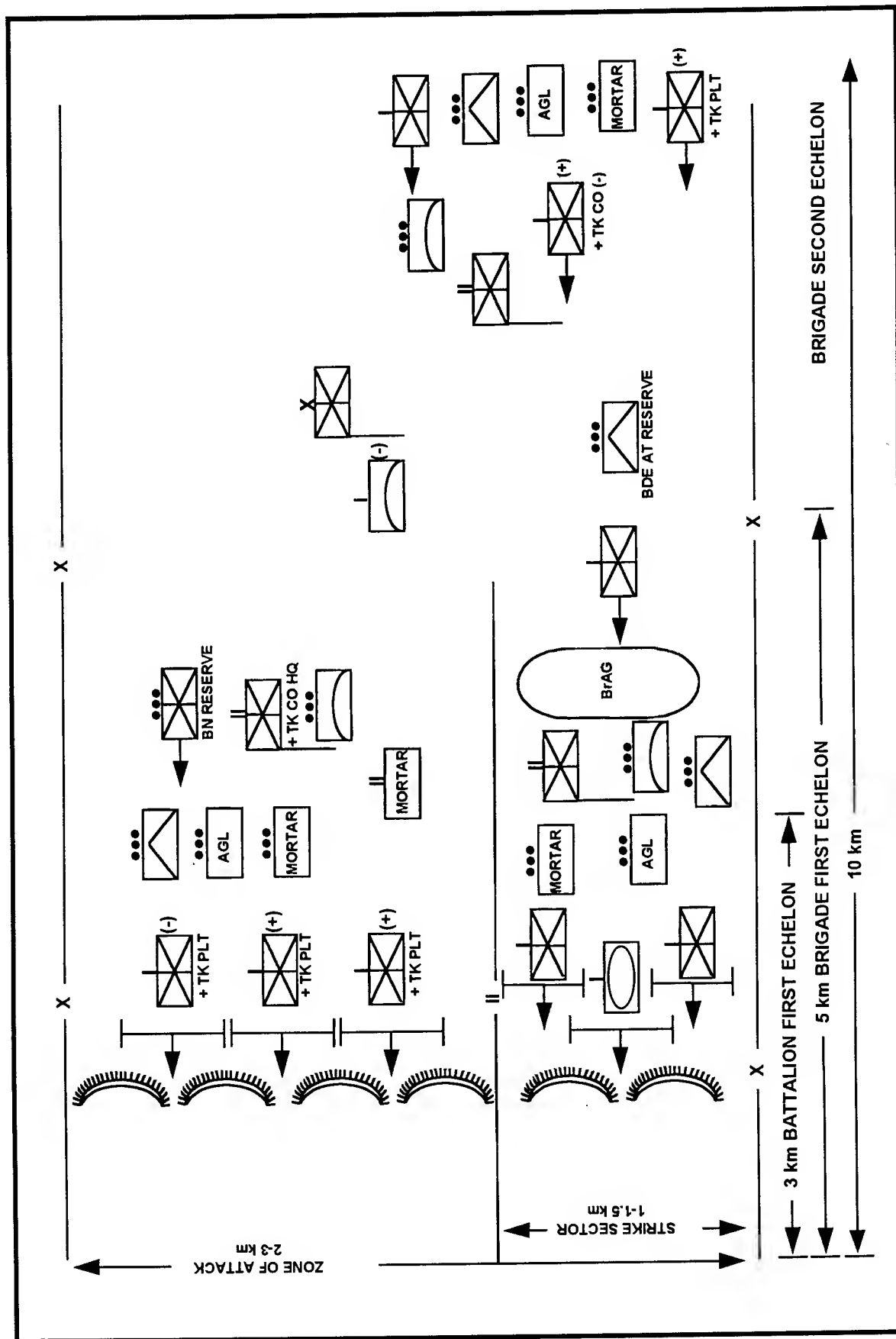
Figure 5-25. Motorized infantry brigade deployment for attack from the march, with tank and artillery reinforcements (example).

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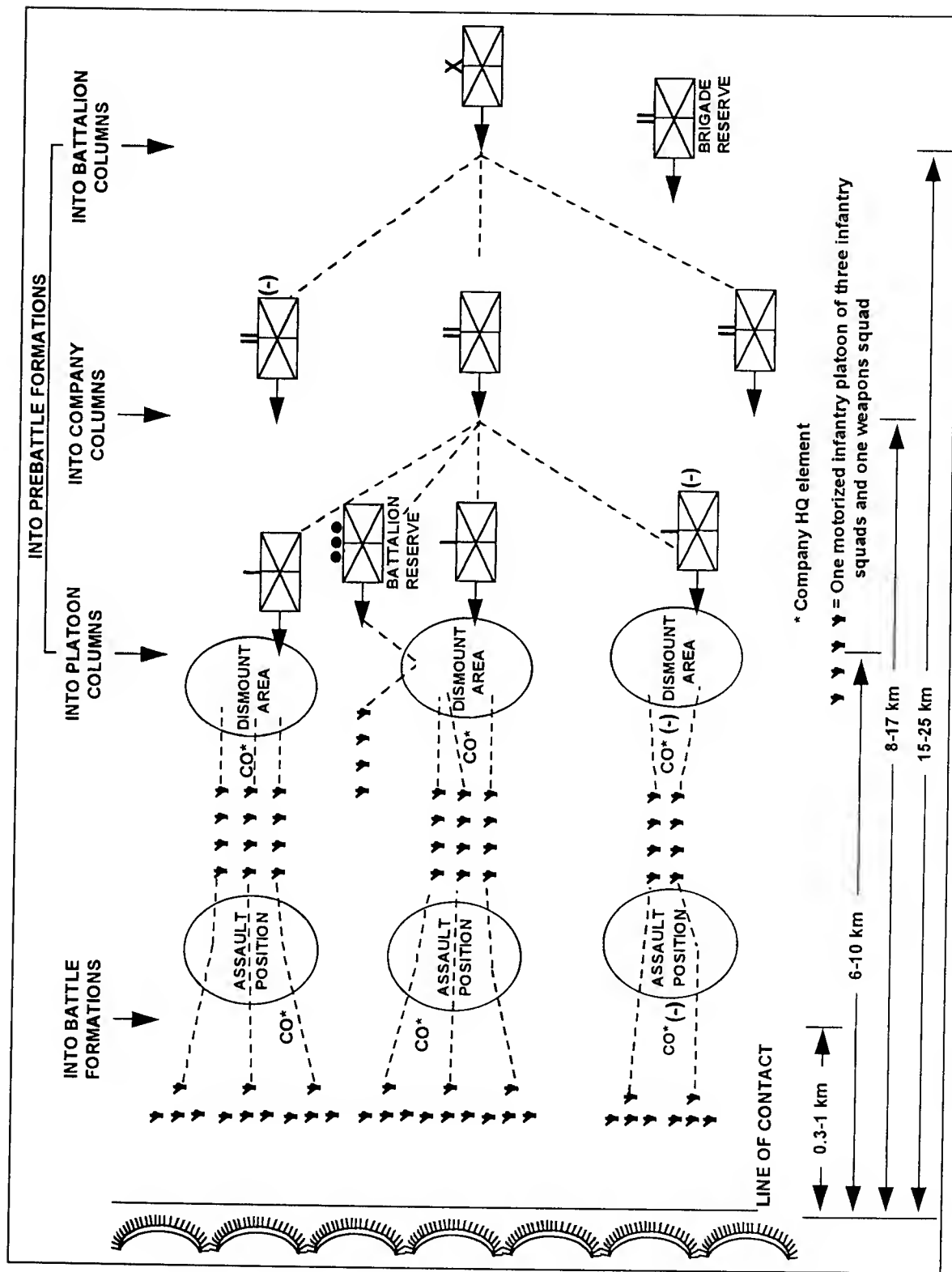
Figure 5-26. Motorized infantry brigade deployment for attack from the march (example).

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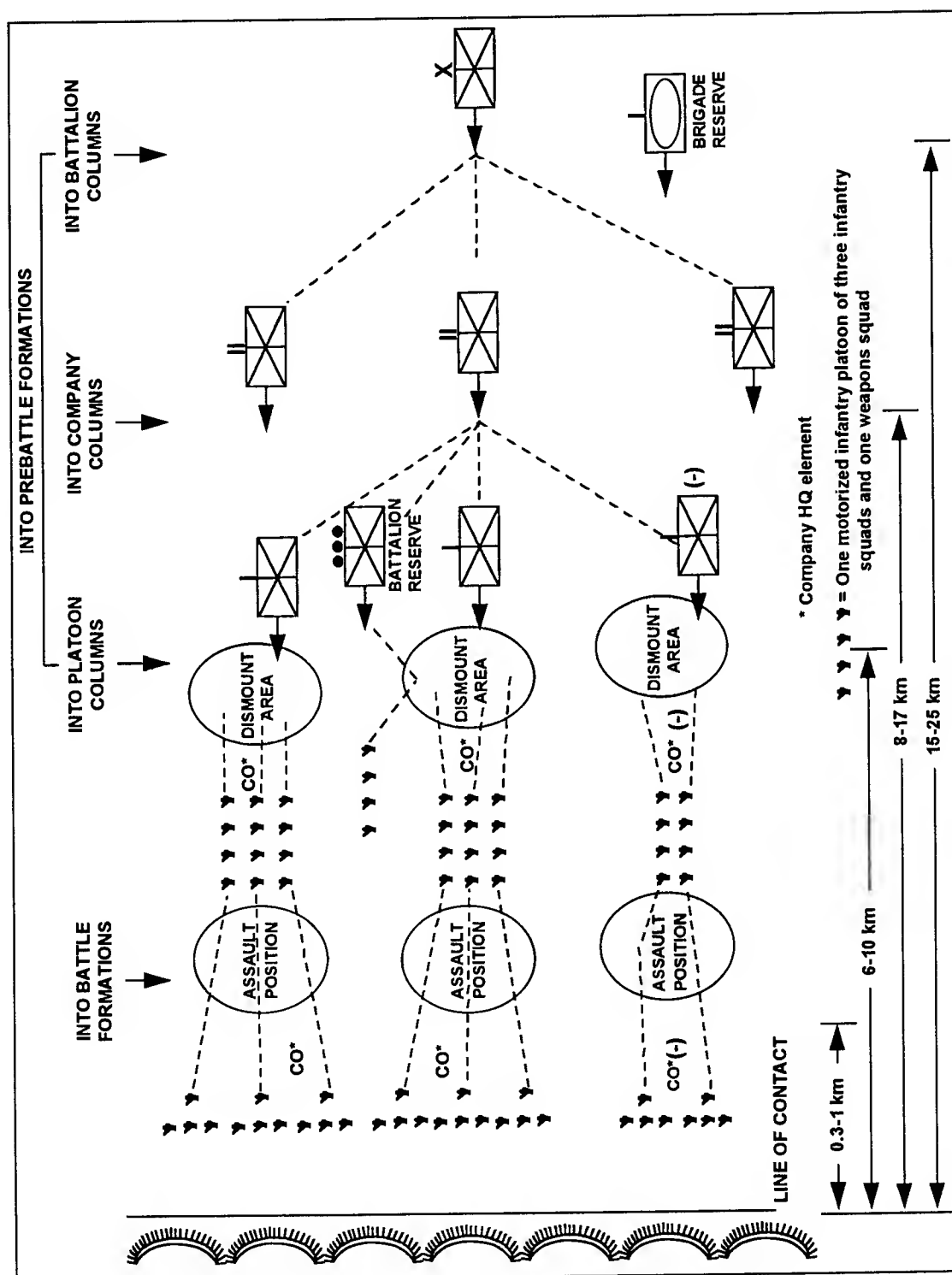
Figure 5-27. Variant of motorized infantry brigade deployment for attack from the march with tank battalion as brigade reserve.

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A brigade in the second echelon of an attacking division moves in march formation behind the first echelon. The division commander defines the mission of the second echelon prior to the attack and refines it during the battle. He designates lines of commitment, preferably on the flanks, through gaps, or between two first-echelon units. This way he avoids the difficulties of passing through a first-echelon unit.

Attack Zone and Strike Sector

A normal strike sector for a division is 2 to 3 km, within an attack zone of 6 to 10 km. The typical brigade strike sector is 1 to 1.5 km, in an attack zone of 2 to 3 km. (See Figure 5-14.)

Axes

In planning an attack against a defending enemy, an OPFOR commander always selects only one axis of main attack. He concentrates the bulk of his resources on the main axis. This ensures that he obtains the ratio of forces required for success. Once he has chosen the axis of main attack, he would make every effort to achieve surprise and overwhelming superiority on this axis.

The OPFOR never shares resources equally among subordinate units. It considers it a waste of resources to allocate more resources to the secondary axis than are absolutely necessary to do the mission. If the force on the main axis is not achieving the expected result, the OPFOR commander would not hesitate to reassign main-axis assets to support a secondary axis where forces are having success. In some types of terrain, such as mountain areas, secondary axes can receive additional combat and service support.

Planning the Attack

Planning for the attack depends on the missions assigned by the higher level commander. The OPFOR commander first assesses the situation, then outlines his concept and intentions, specifying preliminary actions and missions, and directs the preparation of required information and planning. The commander and his chief of staff, battalion and above, decide what information they need, what they already have, and what is lacking. Their analysis of the assigned mission centers on the role of their unit in the attack. The commander determines where to concentrate his main attack, if the higher commander did not designate it. The commander determines what combat formation to use and what rates of advance are possible during the attack. Finally, he passes preliminary orders to subordinate and attached units, specifying where, when, and by what means to conduct the attack.

The OPFOR commander reviews the parent unit's battle plan and reviews the allocation and procedures for employment of chemical weapons and the role of his unit in the scheme. He notes the axes, missions, and groupings of flanking units. The basis for his attack planning stems from consideration of--
- Missions or objectives.
- Enemy dispositions.
- The higher headquarter's fire plan and the allocation of artillery.
- The terrain in the assigned attack zone.
- The weather and light conditions.
- Time of the attack.
- Combat effectiveness and supply situation of all subordinate elements.

Assembly Areas

The OPFOR stages an attack against a defending enemy from **assembly areas**. Forces stay in the assembly area only long enough to assign tasks to subordinate units, to check preparations, and to organize combat formations. The assembly area is far enough forward for the first-echelon units to move to their lines of deployment and close enough that they can reach their assault positions during the artillery preparation.

Dispersion

Units disperse by battalions in assembly areas with their attached reinforcements. Their march routes have prescribed control and deployment lines. These routes permit rapid, effective movement to the assault position. The combat order designates the assault position.

This position should be as near as possible to the forward edge of the enemy defense. When a division occupies an assembly area, it is usually 60 to 75 km from the enemy's forward edge, covering an area of 200 to 600 square km. First-echelon brigades and separate brigades could occupy assembly areas as close as 20 to 30 km from the enemy's forward edge. Figure 5-28 depicts a typical motorized infantry division assembly area.

Preparation and Planning

Preparation of the attack begins in the assembly area. Some engineer preparation of the assembly area is desirable, to improve routes and provide protection for equipment and personnel. The senior commander may deploy logistics assets in the assembly area prior to its occupation by the attacking force.
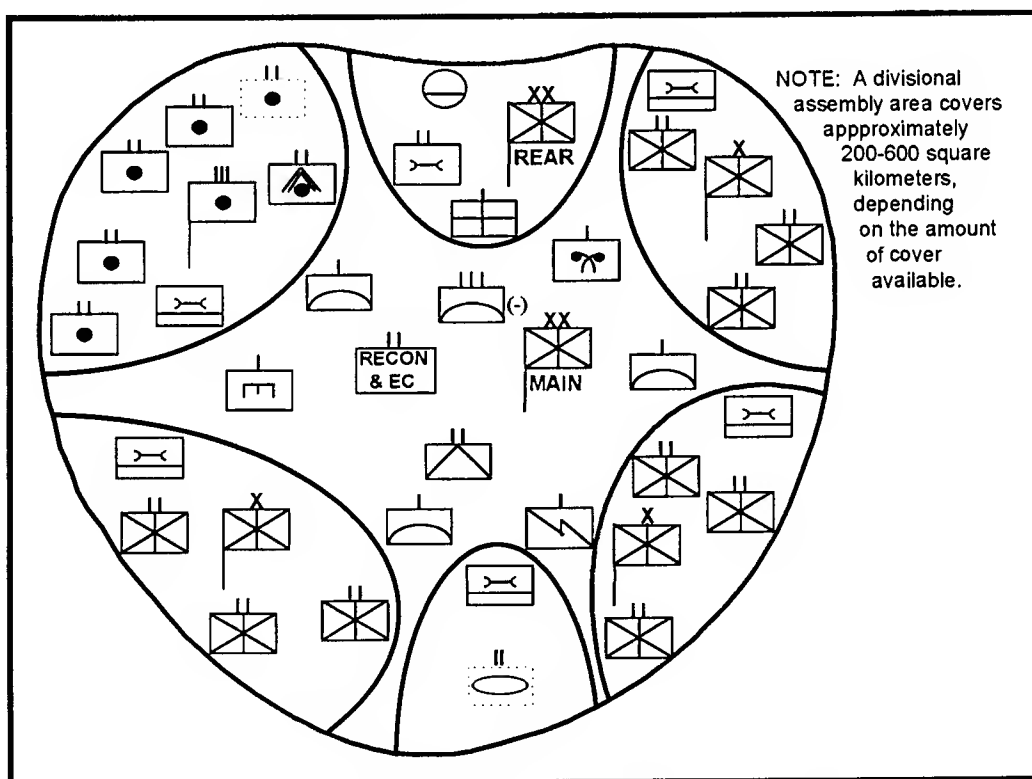
Figure 5-28. Assembly area of a motorized infantry division.

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Commanders ensure their units complete final maintenance and resupply and regroup subordinate units in accordance with their attack plans. All levels of command enforce strict camouflage, concealment, and deception discipline and maintain radio silence.

In the assembly area, air defense units fully deploy to provide protection from air attack. Each maneuver unit provides its own local protection against ground attacks, including static posts and mobile patrols, both on foot and in vehicles. Reconnaissance elements, including commanders conducting their ground reconnaissance, move forward to observe the enemy position. The commanders give final orders, and the staff completes detailed planning.

Reinforcements

Reinforcements usually take place in assembly areas before reaching the start line for the march. These reinforcements then become part of the supported maneuver unit's combat formation. The unit's mission will determine the type and number of reinforcements it receives. A first-echelon division or brigade may receive the following reinforcements from parent unit resources:
- Additional artillery battalions.
- Tank battalion.
- Engineer companies or battalions.
- Air defense elements.
- Communications assets.
- Reconnaissance assets.
- Medical assets.
- Chemical defense assets.
- Materiel support assets.
- Direct air support sorties.

March into Attack

Engineers are likely to be the first to move out of the assembly area. Working in concert with any additional engineer assets, they clear routes and may begin to breach obstacles. Units in contact are responsible for clearing routes through their own minefields. Traffic control elements move out at the same time. Next to move would be the artillery. The division artillery group (DAG) and the brigade artillery groups (BrAGs) must occupy their firing positions at least 1 to 2 hours (6 hours at night) before they are due to open fire. Reconnaissance and artillery troops would previously have reconnoitered their firing positions, and engineers may have prepared the positions for occupation. Some air defense assets also deploy in advance of the main body for route security and to protect the artillery groups. First-echelon units move from the assembly area early enough to arrive at the assault position at a specified time.

Deep Attack Options

To assist in an attack against a defending enemy, an OPFOR attack could include a **vertical envelopment** by a heliborne force of up to a battalion in size. A motorized infantry battalion could conduct such an assault. This battalion (or company) could come from the division's second-echelon. Heliborne assaults using motorized infantry troops can extend out to 15 km beyond the forward edge. Likely objectives are key locations such as bridges, or river-crossing sites. (For more detail on heliborne landings, see Chapter 11 in the *Light OPFOR Operational Art Handbook*.) The OPFOR routinely discusses using heliborne forces in coordination with forward detachments and enveloping detachments. A division could employ a forward detachment up to a reinforced battalion in strength to link up with a heliborne assault.

Commitment of Second Echelon or Reserve

The commander commits his second echelon or reserve on the **axis of the most successful penetration**. A second echelon begins the attack with an assigned mission, which is normally to continue the attack on the division's designated main attack axis. However, that axis could change during the course of the battle, and the commander can commit his second echelon on the new main axis. A reserve does not have an assigned mission at the beginning of an attack, but is prepared to attack along the most opportune axis at a time the commander determines. If the attack continues successfully, this could lead to the higher headquarter's commitment of its own follow-on forces to develop the penetration further. The commitment of additional forces would result in a widening and ever-deepening rapid penetration and exploitation. (See Figure 5-17.)

Section III. Battalion and Below

Sections I and II have included some discussion of the roles of battalions and companies in the conduct of the offense by higher organizations. This section focuses on offensive tactics within the battalion and company.

BATTALION

A battalion attacks as part of its parent brigade. It does not have the organic combat support or combat service support necessary for independent action, except when it deploys as--
- An advance guard.
- A forward detachment.
- A raiding or enveloping detachment.
- A heliborne or amphibious landing force.

Under these circumstances, the battalion receives reinforcements to sustain it for the duration of its mission. Even when a battalion is attacking as part of the brigade, the OPFOR could augment it with the capability for more independent actions. This is more common on the nonlinear battlefield.

Elements of Combat Formation

Maneuver battalions have most of the same basic elements of combat formation as higher organizations. However, they occur on a smaller scale and without the benefit of some specialized troops.

Reconnaissance

Battalions and below do not have organic reconnaissance troops. The commander must use assigned maneuver forces to fulfill his reconnaissance needs. These elements vary in size from a few troops to a platoon. They may or may not have reinforcements in the form of combat engineers or chemical defense personnel.

Echelons

A motorized infantry battalion usually attacks in two echelons. If it attacks in a single echelon, the commander retains a small reserve, at least a platoon. Figure 5-29 shows an **example** of a motorized battalion deployed for an attack against a defending enemy.
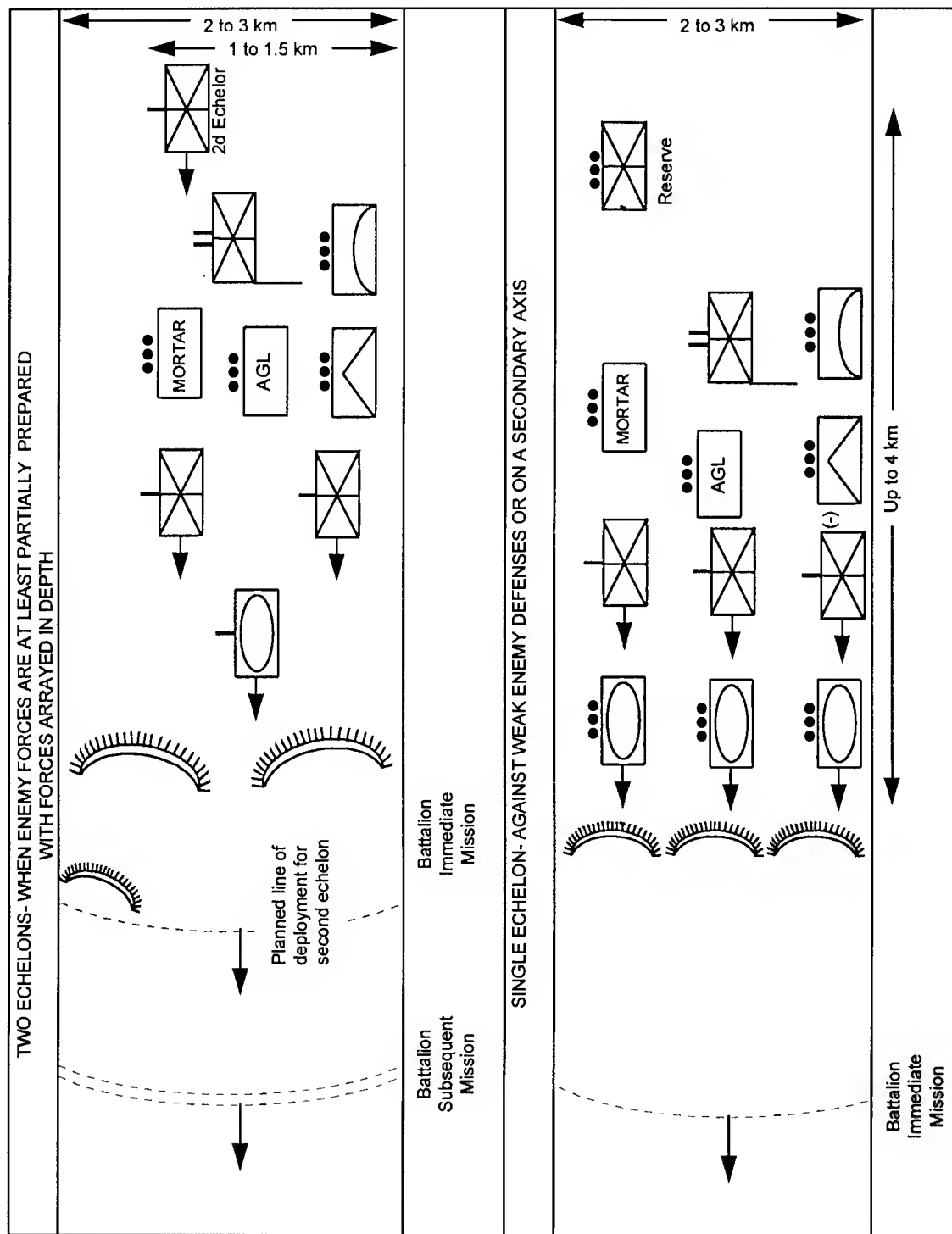
Figure 5-29. Motorized infantry battalion combat formations, reinforced with tank company (examples).

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Reserves

The normal battalion maneuver reserve is platoon-sized. Again, the commander may choose to form a smaller or larger reserve depending upon the tactical situation. The battalion does not have organic chemical defense or combat engineer personnel to form special reserves. The battalion does have an AT platoon available for the commander's use as an AT reserve.

Fire Support

The only organic indirect fire support at battalion is its mortar platoon. On rare occasions, however, the battalion could receive up to a battalion of howitzers as reinforcement. For additional organic fire support, some infantry battalions have an automatic grenade launcher platoon. Each battalion has an organic air defense platoon to provide its dedicated air defense support.

Tactical Formations

Figure 5-33 illustrates a motorized infantry battalion transitioning from battalion prebattle formation (company columns), through company prebattle formation (platoon columns), to company battle formation (platoons deployed laterally).

March Formation

A battalion marches in a single column until its subordinate units begin their deployment into prebattle and battle formations. (See Chapter 3 for more detail on the battalion march.)

Prebattle Formation

A battalion assumes prebattle formation by deploying from a single battalion column of companies into **individual company columns**. At a point outside the maximum range of the defender's AT weapons, tanks, and other direct fire systems, the commander establishes a **line of deployment into company columns**.

Within the battalion prebattle formation, each company moves in march column. In relation to one another, the company columns may be in a line, in a forward or reverse wedge, or echeloned left or right. To control both the movement and the battle, the battalion commander normally travels directly behind the lead company or companies in the prebattle formation. Figure 5-30 illustrates variations of battalion prebattle formations.

Units from battalion down to platoon rehearse and drill to ensure that they can rapidly deploy from the march to the prebattle formation, then to company battle formation, and back. Movement in these formations serves as a battle drill for the subordinate unit commanders. It provides the basis for a rapid-reaction attack from the march or a planned attack against a defending enemy.

Battle Formation

A maneuver battalion reaches battle formation when its **first-echelon companies deploy into battle formation**. Until actually committed, the battalion's second-echelon company remains in march or prebattle formation.
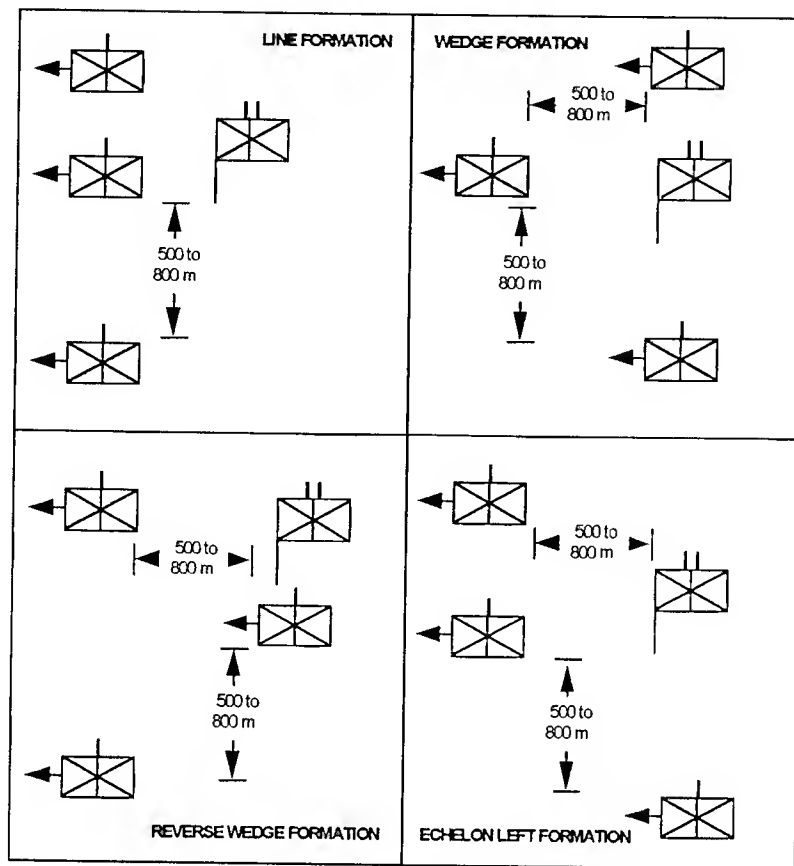
Figure 5-30. Motorized infantry battalion prebattle formations.

Attack against Defending Enemy

The following paragraphs focus on battalion actions in the two types of **attack against a defending enemy.** For the meeting battle and pursuit, see Section I of this chapter. Motorized infantry forces conduct dismounted attacks on the enemy's forward edge. Factors that favor use of the dismounted assault are as follows:

- Strong enemy AT capability.
- Well-prepared enemy defenses.
- Fords or bridges.
- Obstacles or minefields.
- Rough terrain with no high-speed avenues of attack.
- Need for maximum firepower.

Attack from the March

Battalions fight as part of their parent brigade, which in turn fights as part of a division. A division leaves its assembly area in a column of brigades. Within the brigades are columns of battalions, each battalion a column of companies. The battalion commander designates a dismount area for each company in which the motorized infantry squads dismount from their trucks. The dismount area is normally behind terrain or vegetation that can protect the soldiers and trucks from direct fire and some indirect fire. The dismounted squads depart the dismount area in prebattle formation, dismounted platoon columns. They advance to designated assault positions that are the last covered and concealed positions before

5-50

the enemy defense positions. The dismounted motorized infantry platoons of the company depart the assault positions in battle formation and assault towards the rear of the first-echelon platoons. Once the battalion achieves its immediate mission, it continues towards its subsequent mission (rear of enemy first-echelon battalion).

Attack from Positions in Direct Contact

A first-echelon battalion can attack from positions in direct contact with the enemy. One or two companies maintain contact and support the attack with direct fire. The third company maneuvers and infiltrates around the enemy or through a gap to assault from the flank. A first-echelon battalion that has successfully penetrated the enemy forward defenses establishes and secures the gap through which follow-on forces move to continue the attack.

Missions

The brigade commander assigns a first-echelon battalion an immediate mission, a subsequent mission (in coordination with adjacent battalions), and a subsequent direction of advance (toward the brigade subsequent mission). A second-echelon battalion receives an immediate mission (in coordination with first-echelon battalions, to complete the latters' subsequent mission), and a subsequent direction of advance (toward the brigade subsequent mission). OPFOR units normally do not stop on objectives or mission lines and consolidate. They continue the attack deeper into the   enemy rear.

Attack Zone and Strike Sector

A normal strike sector for an attacking battalion is 500 to 750 meters, within an attack zone of 1 to 1.5 km. These frontages can vary according to the situation.

Reinforcements

The OPFOR reinforces its maneuver battalions with tanks, if available, and with several combat support units prior to contact with enemy forces. Reinforcement usually takes place in assembly areas or before reaching the start line for the march. These reinforcing elements deploy to become part of the supported maneuver battalion's combat formation. (See Figure 5-31.)

Minefield Breaching

The OPFOR breaches minefields with a combination of tanks with mine rollers or plows (if available), line charges, combat engineers, and possibly fuel-air explosives. Cover for the mine clearing effort includes smoke and intense fire on enemy defensive positions. Ideally, the OPFOR creates one lane per attacking platoon through an obstacle or minefield. One tank per tank platoon normally has a mine plow. In addition, each tank company may have a mine roller or plow. Motorized infantry units cover each other's passage through the minefield or any other obstacle.
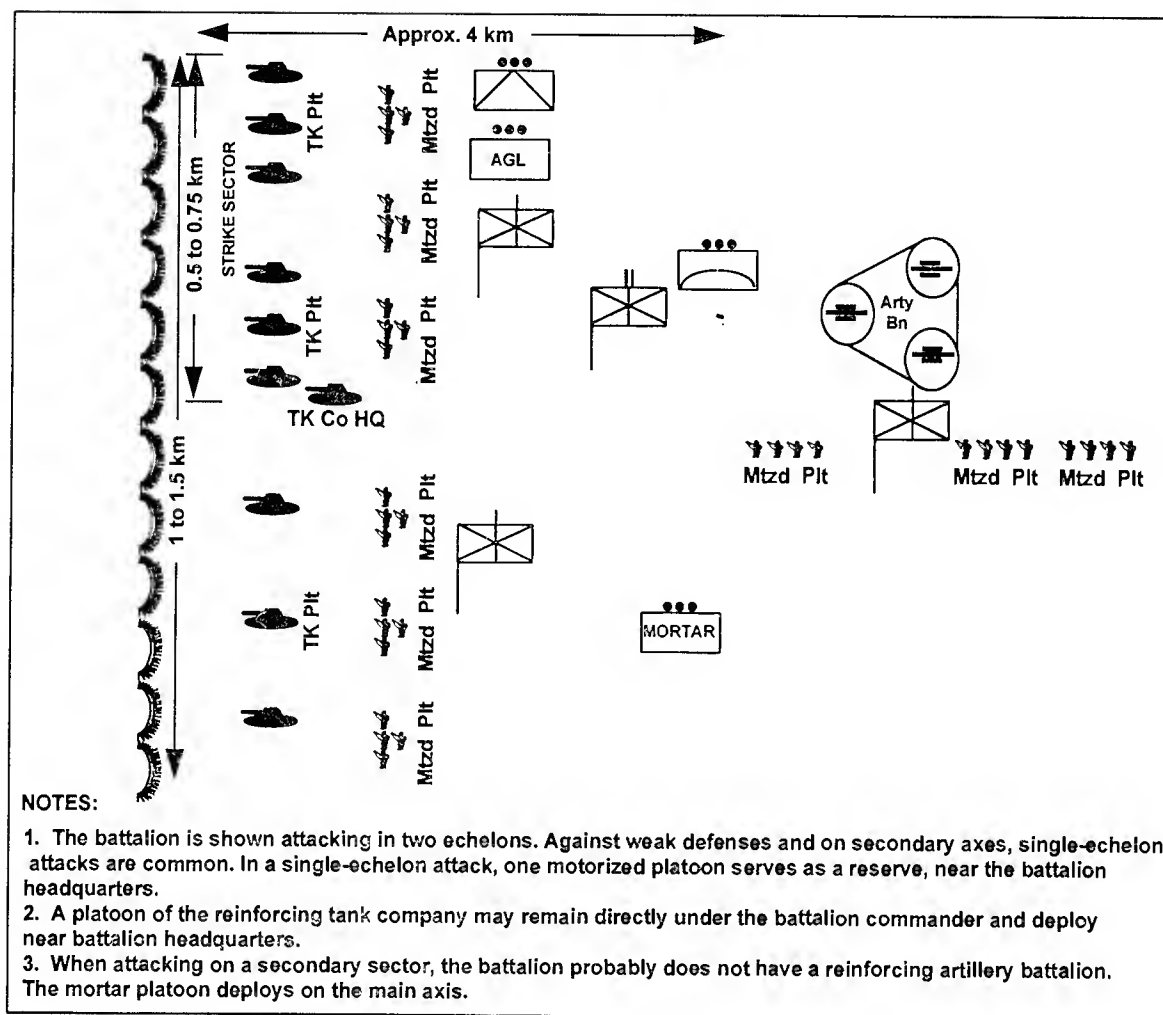
Figure 5-31. Motorized infantry battalion deployment in the attack, reinforced with tank and artillery (example).

Fire Support

The artillery preparation should end just before first-echelon elements reach the enemy's forward edge. Fires normally shift on the maneuver commander's orders when the lead elements are ready to begin the assault on the enemy forward defenses. While fighting through enemy defenses, maneuver elements follow in the path of intense artillery and mortar fires. Fixed-wing air strikes normally engage targets beyond artillery range. Attack helicopters can provide direct air support for ground units in contact with the enemy.

Fire and Movement

In the assault on the enemy's forward edge, there is little space for fire and movement at the lowest levels. The emphasis is on generating and maintaining momentum, and even the briefest pause can be fatal. As the battle develops in depth, however, the commander expects greater flexibility, and employs fire and maneuver tactics within squads.

Action Following Penetration

The OPFOR expects a defending enemy to attempt rapid assessment of the direction and weight of the main attack. It also expects allocation of all available enemy forces to defeat the attack. Therefore, as the first-echelon battalions move to deeper missions, the brigade commander stays particularly alert for enemy counterattacks.

Action Against Counterattacks. The brigade commander expects enemy counterattacks, and must provide for their defeat in every plan of attack. The goal is to defeat the counterattack and maintain the advance of the main body.

If the counterattacking force is superior in strength, OPFOR commanders prefer to fight from a firing line on favorable ground, but they would rather fight an equal or weaker enemy from the march. In the former case, it is important to engage the enemy with artillery and mortars at the longest possible ranges. The OPFOR attempts to strip the infantry away from the enemy tanks and to destroy each element separately. Once it stops the counterattack, the blocking force would try to advance and complete the destruction of the enemy.

Action on Success. When an attack has succeeded, the primary consideration is to keep up the momentum. If the attack destroys the enemy, units reform into march or prebattle formation. If the brigade detects an enemy withdrawal, it would send out additional reconnaissance and launch a pursuit.

Action on Failure. If the attack fails, there are two options available to the brigade commander. First, he can bypass the opposi-

tion and continue the advance, leaving the enemy for follow-on forces to destroy. This possibility assumes that his unit remains a viable fighting force. Alternatively, he could direct his subordinates to defend in contact pending a change in the situation that will enable them to again transition to the offense. In the latter case, he would probably request reinforcement.

COMPANY

As a rule, a motorized infantry company fights as part of a motorized battalion. However, it can also act independently as a reconnaissance detachment, a heliborne landing force , an enveloping detachment, or a brigade FD.

Elements of Combat Formation

Like battalion, the company uses maneuver troops to conduct reconnaissance as scout patrols and observation and listening posts. Companies normally attack in one echelon with platoons deployed laterally. A normal company maneuver reserve is a squad-sized element.

Tactical Formations

The company is the highest level organization that actually has all three types of tactical formation. It transitions from march column, directly or through prebattle formation, into battle formation. (See Figure 5-33.)

March Formation

In the march, a company travels in a company column. If enemy artillery or aircraft destroyed its trucks or the company had to travel dismounted over rough terrain, it can also use a company file.

The company commander normally specifies which platoon formation he wants used within the company formation. If he does not, each platoon leader selects his platoon's formation. The company commander designates one platoon as the lead platoon. When moving in a formation, the company normally orients on the lead platoon, keying the remainder of the company's speed and direction on this platoon. This permits quick changes and lets the commander control the entire company by controlling the lead platoon. The commander normally locates himself within the formation where he can best see and direct the lead platoon.

Column. This mounted formation allows the motorized infantry company to make contact with one platoon and maneuver with the two trail platoons. (See Figure 5-32.) It is a flexible formation, allowing easy transition to other formations. It provides good all-round security and allows fast movement. It provides good dispersion and aids maneuver and control, especially during limited visibility. The company can deliver a limited volume of fire to the front and rear, but a high volume to the flanks.

File. The commander forms this dismounted formation by arranging platoon files behind the lead platoon. This formation is easy to control and allows rapid movement in close or restricted terrain or during limited visibility. It enhances control and concealment, but provides poor security. The file makes transition to other formations difficult. The commander locates forward with the lead platoon headquarters element to increase control and his ability to be in position to make critical decisions.

Any enemy contact can break up the company file and can result in the loss of control. A commander should use a company file only when necessary and then, for short periods of time. In this formation, a company of 100 to 120 dismounted infantrymen can stretch out 500 to 600 meters in length.
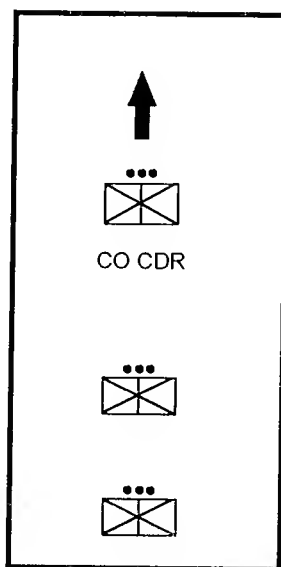
Figure 5-32. Column.

Prebattle Formation

The company prebattle formation is the final stage of deployment before battle formation. A company in prebattle formation does not deploy laterally beyond **platoon columns**. The commander selects the location of a **dismount area** in terrain that screens the dismounting and deployment into platoon columns, particularly from the defenders' short-range AT weapons. The intervals between platoon columns in prebattle formation should allow the platoons to fully deploy into battle formation without further lateral expansion of the company formation.

Unlike higher-level organizations, the company does not necessarily have to use a prebattle formation. It can go directly from the march into battle formation, if the situation requires. Figure 5-33 illustrates a motorized infantry battalion transitioning from the battalion prebattle formation (company columns) through the company prebattle formation (platoon columns) to company battle formation (platoons deployed laterally).

Battle Formation

An OPFOR company assumes battle formation immediately before combat. When the company's **platoons and any reinforcing units deploy laterally into battle formation**, the company is in battle formation. Within the company, platoons can array themselves in the reverse wedge, wedge, or echelon formations, based on the situation. However, an array of platoons on line is most common. These formations describe the locations of the company's platoons in relation to one another. (See Figures 5-34 through 5-37.) The best formation to use depends on the--

- Mission.
- Enemy situation.
- Terrain.
- Weather and visibility conditions.
- Speed of movement desired.
- Degree of flexibility desired.

Battle formation maximizes the firepower of the company by bringing to bear the greatest number of weapons systems. Conversely, it is the slowest moving and the most difficult to control of all tactical formations. As a result, an OPFOR company **assumes battle formation only when necessary**.

The battalion commander relies on his companies to act according to battle drills. This allows him more time to concentrate on maneuvering them and coordinating their actions rather than on giving them detailed instructions. When moving cross-country, the distance between platoons varies according to the same factors that determine the array of the platoon battle formation. The OPFOR soldiers constantly observe their sectors for likely enemy positions, and look for the nearest available cover in case of enemy contact.
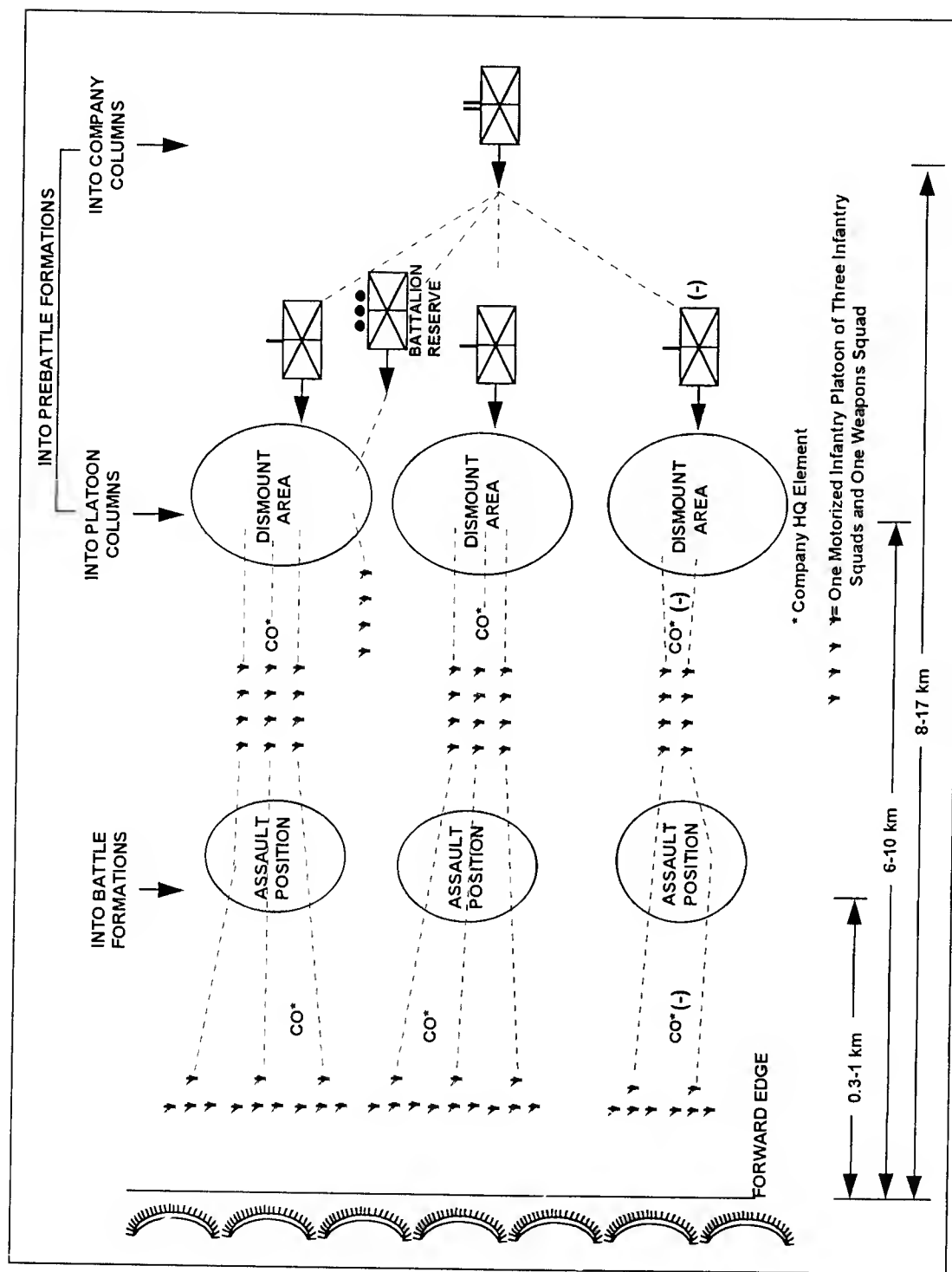
Figure 5-33. Motorized infantry battalion transitioning from march to battle formations.

5-56
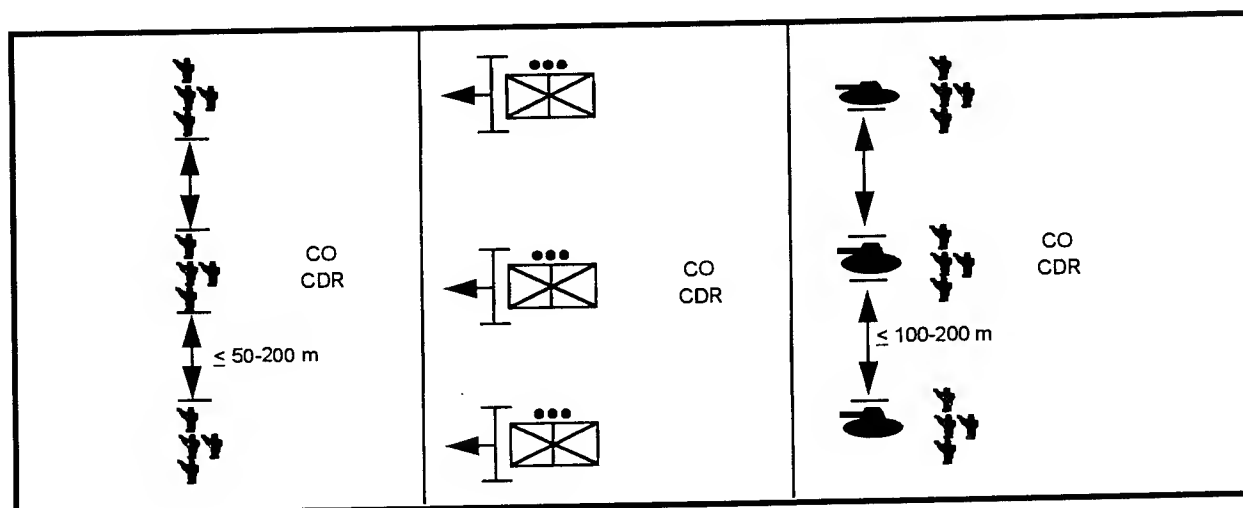
Figure 5-34. Line.

Line

This formation puts three platoons forward and provides for the delivery of maximum fire to the front, but less to the flanks. It is the most difficult to control. (See Figure 5-34.) The company commander designates the center platoon as the lead platoon. The company commander moves close behind that platoon. Flank and rear security are generally poor.

Wedge

The wedge has two platoons in the rear that can observe and provide supporting fire to the lead platoon or trail it. It provides for immediate fire to the front and flanks. (See Figure 5-35.) The company commander can still maneuver one or two platoons after the lead platoon makes contact. If the enemy attacks the company from the flank, one platoon is free to maneuver. The formation is hard to control, but it allows relatively fast movement.
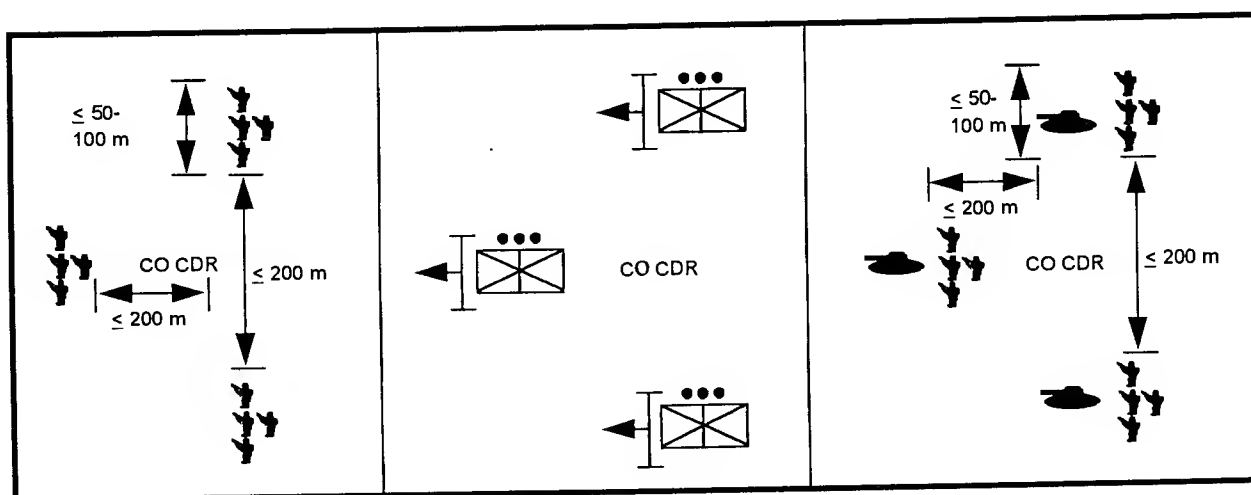
Figure 5-35. Wedge.

Reverse Wedge

This formation has two platoons forward to provide immediate fire contact to the front or to the flank upon with the enemy. The one platoon in the rear can observe and provide fire support to the other platoons or trail them. If the enemy attacks the company's flank, two platoons provide fire and one is free to maneuver. This formation is difficult to control and slows movement. (See Figure 5-36.) The company commander designates one of the forward platoons as the lead platoon. He normally moves close behind that platoon.
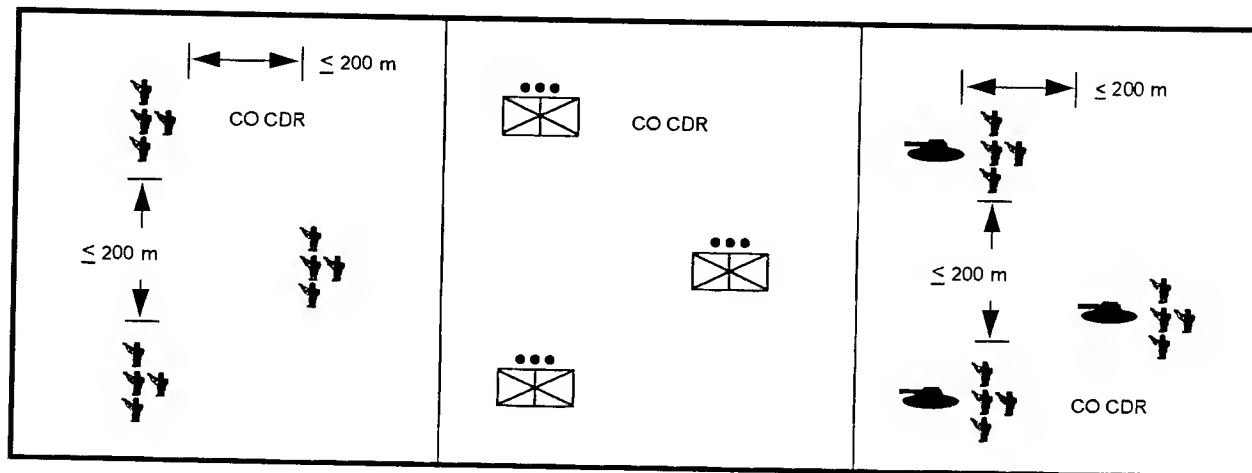
Figure 5-36. Reverse wedge.
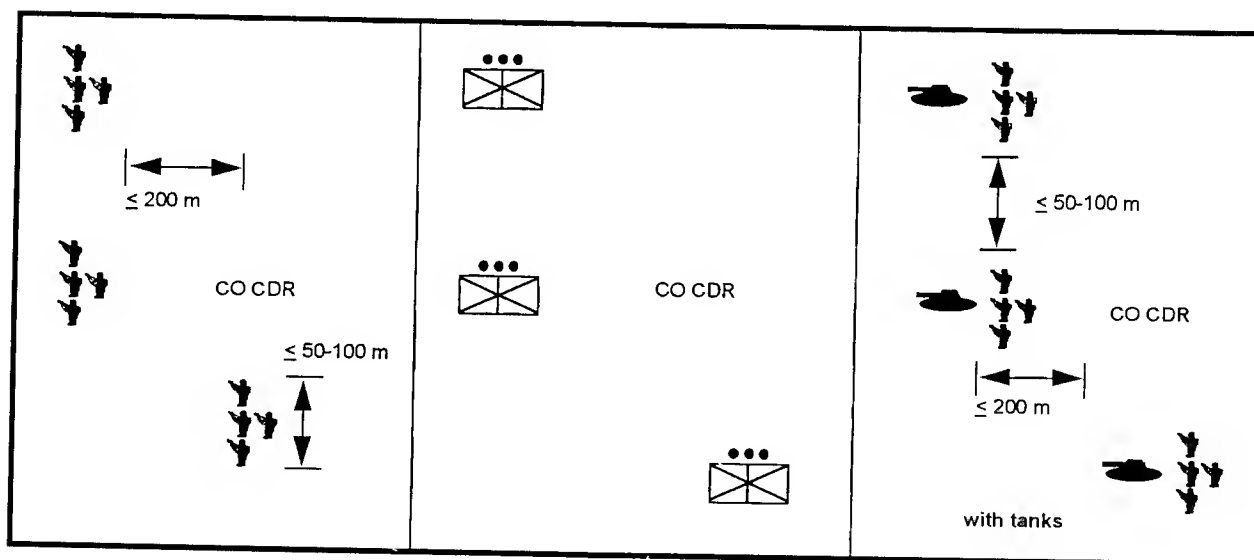
Figure 5-37. Echelon-left.

Echelon-Left or -Right

If the enemy situation is unclear and enemy contact to the front or on a flank is likely, the company uses this formation. (See Figure 5-37.) Normally, the OPFOR places an obstacle or another company on the unprotected flank of the company to prevent enemy contact on that side. The formation provides a good volume of fire and protection to the protected flank, but less to the opposite flank.

Dismount Area

Motorized infantry always dismounts in a designated dismount area well outside the range of enemy direct fire weapons, usually 6 to 10 km from the forward edge. The motorized infantry company then moves in platoon columns (prebattle formation) and advances, preferably through terrain that provides concealment from the enemy, to an assault position.

Assault Position

The assault position is where the motorized infantry platoons deploy into battle formation with tanks, if available, in front of the infantry. Its location depends on the preparation of the enemy defense and the degree of destruction by friendly artillery. It should be as close to enemy positions as the terrain and friendly fires allow. The assault position should be outside the range of enemy short-range AT weapons and small arms and permit a rapid advance into the enemy positions. It is usually at the last covered and concealed position before the enemy's defensive positions (at least 300 meters from the enemy forward edge), but can be farther out (up to 1,000 meters). In any event, it is farther forward than the supporting BrAG. From the assault position, the dismounted infantry conducts its assault on the objective.

Attack Against Defending Enemy

The following paragraphs focus on company actions in two types of **attack against a defending enemy**. For the meeting battle or pursuit, see Section I of this chapter.

Attack from the March

Companies fight as part of their parent battalion, which in turn fights as part of a brigade. A brigade leaves its assembly area in a column of battalions. Within the battalions are columns of companies, each company a column of platoons. The battalion commander designates a dismount area for each company in which the motorized infantry squads dismount from their trucks. The dismount area is normally behind terrain or vegetation that can protect the soldiers and trucks from direct fire and some indirect fire. The dismounted squads depart the dismount area in prebattle formation, dismounted platoon columns. They advance to designated assault positions that are the last covered and concealed positions before the enemy defense positions. The dismounted motorized infantry platoons of the company depart the assault positions in battle formation and assault towards the rear of the first-echelon platoons. Once the platoons overcome these defensive positions, they continue along their subsequent direction of advance towards the company's immediate mission (rear of enemy first-echelon company).

Once the company achieves it immediate mission, it continues along its subsequent direction of advance toward the battalion's immediate mission (rear of enemy first-echelon battalion). (See Figure 5-38.)

Attack from Positions in Direct Contact

A first-echelon company can attack from positions in direct contact with the enemy. One or two platoons maintain contact and support the attack with direct fire. The third platoon maneuvers and infiltrates around the enemy or through a gap to assault from the flank. A first-echelon company that has successfully penetrated the enemy forward defenses establishes and secures the gap through which follow-on forces move to continue the attack. Figure 5-39 illustrates a company assaulting enemy positions to penetrate the enemy forward defense.

Missions

First-echelon companies receive an immediate mission and a subsequent direction of advance (toward the battalion immediate mission). A second-echelon company receives an immediate mission (usually to work together with first-echelon companies to complete their mission) and a subsequent direction of advance (toward the battalion subsequent mission).

Attack Zone and Strike Sector

A typical company strike sector is 150 to 200 meters, within an attack zone of 500 to 750 meters. A platoon's normal strike sector is 50 to 100 meters, within an attack zone of 150 to 200 meters.
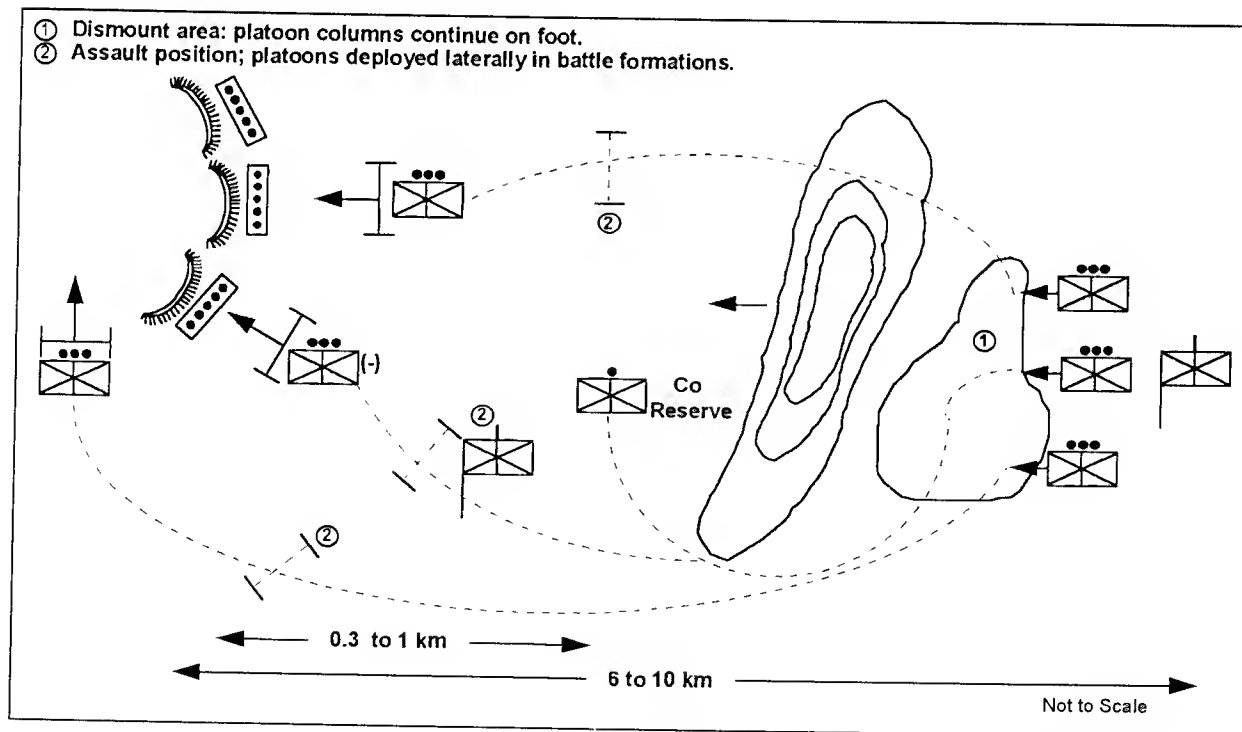
Figure 5-38. Motorized infantry company attack from the march (example).
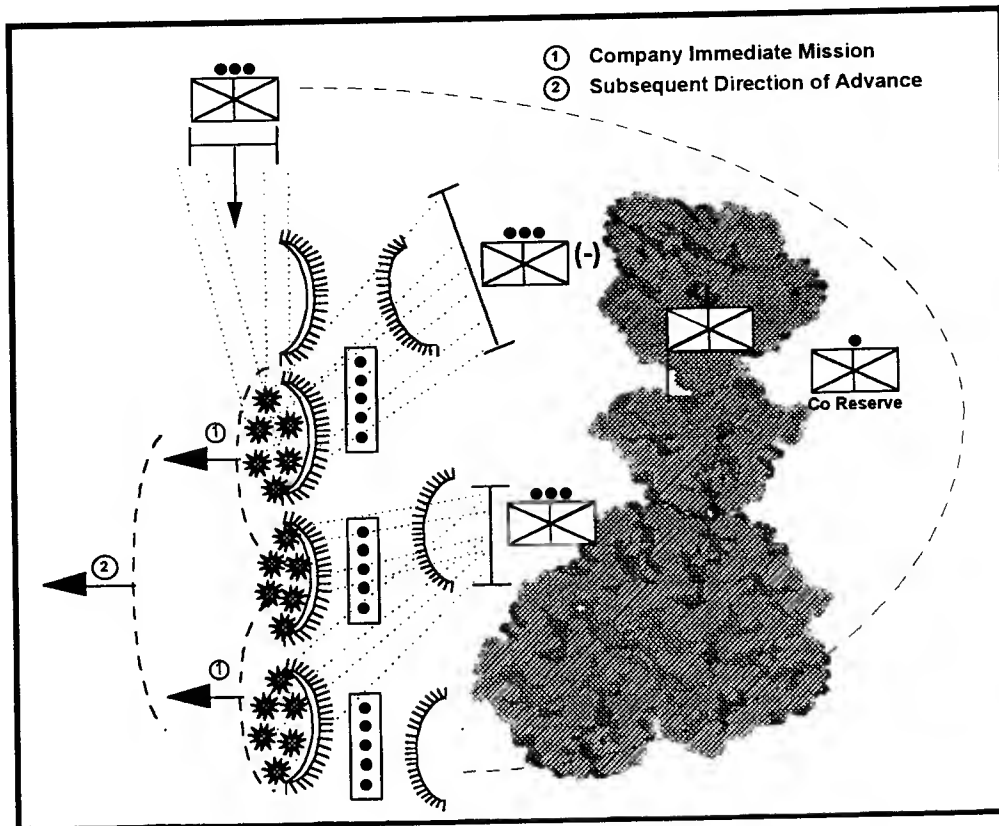
Figure 5-39. Motorized infantry company attack from positions in direct contact (example).

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Chapter 6
Defense

The focus in this chapter is on truck-mounted, **motorized infantry** and how other arms, possibly including tanks, support it. For more detail on mechanized infantry and tank tactics, see the *Heavy OPFOR Tactics Handbook*. The use of light infantry may be more common in the defense; however, it would fight the same as motorized infantry, once the latter has dismounted. The focus here is also on the defense within **first-echelon divisions and military districts**.

Section I. Fundamentals of Defense

OPFOR military doctrine considers defense the basic type of combat required to repel possible invasion inside the State border. It sees the offense as the decisive form of military maneuver. Despite its preference for the offense, however, the OPFOR accepts that there are times when it may have to conduct defensive actions. Such circumstances might occur--

- Before the outbreak of a war, or in its early stages to cover the mobilization and deployment of the main forces.
- In the face of overwhelmingly superior enemy forces.
- During an offensive battle, to econo-mize force in one sector, and achieve superiority on the main axis.
- To defeat a counterattack during an OPFOR offensive.
- To consolidate lines or positions that forward detachments (FD) or other ad-vanced forces have captured to facili-tate the advance of the main forces.
- When a unit has suffered serious losses and can no longer conduct offensive actions.

Under these conditions, the goal for defense is to repel an attack by enemy forces, inflict maximum losses on him, and hold important terrain and objectives. Thereby, the defense can create favorable conditions for launching an attack.

As a rule, defending forces are numeri-cally inferior to an attacking enemy. So the possibility of repelling an attack depends on the ability of commanders and troops to ex-ploit the advantages of being on the defense. Whenever possible, defending units choose the place of battle so they can use the terrain's protective features. To accomplish this, the OPFOR selects defensive positions behind natural obstacles and in other terrain sectors that provide good fields of view and fire to-ward the enemy to maximum range of available weapons. It attempts to engage an attacking enemy when he is moving forward and taking up an attack position, or when he is assaulting the forward edge.[1] However, the OPFOR may also conduct defensive battle to hold defensive positions and lines deeper in its own rear. OPFOR commanders tend to avoid defending

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[1] The OPFOR defines **forward edge of the defense** as the frontline trace of the division's main defense belt (or line). This corresponds to the first trench lines of first-echelon platoon strongpoints. That means that the OPFOR defense often includes combat security forces (FDs, forward positions, or combat security out-posts) deployed more forward than the forward edge. In this chapter, the shortened form **forward edge** re-fers to the forward edge of the OPFOR defense.

from "commanding terrain," since they could become easy targets for massed enemy fires or high-precision weapons.

PRINCIPLES OF DEFENSE

The execution of a successful OPFOR defense revolves around a few key characteristics. The general principles of OPFOR defensive tactics are as follows:

Reconnaissance

The defensive plan begins with reconnaissance, which is the driving force behind a successful OPFOR defense. The OPFOR conducts detailed reconnaissance at all levels to identify the enemy's most likely course of action and how to exploit his vulnerabilities. The OPFOR also must identify enemy strengths and find ways to negate, disrupt, destroy, or avoid them. Effects of terrain and weather, along with enemy capabilities, help the OPFOR select the best terrain to defend. Synchronized intelligence assets can quickly and accurately identify enemy actions in order to focus the counterreconnaissance and disruption forces.

Preparation

The OPFOR arrives in the battle area before the attacker, making the most thorough preparation that time allows. If the defense takes place within the State, much of the preparation would have taken place in peacetime. This preparation includes preliminary engineer work and the establishment of caches near planned defensive positions. In the early stages of battle, the OPFOR capitalizes on the advantage of fighting from positions of its selection, and looks for opportunities to take the initiative from the attacker.

Immediately upon occupying its defensive site, the OPFOR begins its priorities of work. The OPFOR believes that attack is always imminent. Therefore, it emphasizes--

- Well-employed primary fighting positions.
- Camouflage, concealment, and deception (CCD) techniques.
- Use of restrictive terrain, obstacles and minefields.
- Integration of fires in the development of kill zones.

The OPFOR rehearses to perfection the commitment of the reserve and local counterattack forces. Preparation ends when execution begins.

CCD and Surprise

Camouflage, concealment, and deception (CCD) is the key to surprise. The OPFOR emphasizes concealment of its own forces and the use of deception to mislead the enemy about the disposition of the defense. It also uses ambushes, obstacles, and any other tactical means available to surprise the enemy. Establishing security zones aids in this concealment and deception effort.

Deception confuses the enemy, disrupts his synchronization, and gains valuable time for the OPFOR. During the planning process, intelligence/reconnaissance identifies the enemy commander's intent and focus. The OPFOR staff plans in excruciating detail a deception "story" that centers around this focus, and lures the enemy commander and his unit astray or into a trap.

The OPFOR combines both passive and active security measures to ensure the integrity of the defensive site. Effective CCD techniques, along with carefully selected terrain, passively deny the enemy the ability to

accurately acquire the strongpoint for targeting. Constant and aggressive reconnaissance and counterreconnaissance eliminate enemy ground reconnaissance assets, and forces the enemy to attack "blind." OPFOR soldiers rigidly adhere to security measures; it is extremely rare to find one with any compromising information on his person.

Disruption

The OPFOR attempts to disrupt the attacker's tempo and synchronization in order to counter his initiative, and possibly superior firepower. The goal is to prevent him from conducting a coordinated attack and massing the desired combat power at the decisive point. Disrupting the synchronization and integrity of the attack is critical to success, since it allows the OPFOR to fight the attacker one combat system at a time. Keys to this effort are interrupting the enemy's fire support, massed infantry movements, armor forces, logistics support, or C^2. The basis for this characteristic is an extremely aggressive and daring counterreconnaissance effort at every level of the defense.

Mass and Concentration

The defense always includes a main effort, with second echelon and/or reserves and all support positioned and prioritized on that basis. The OPFOR seeks to mass the effects of combat power at the key time at the decisive point to destroy the enemy. To obtain this effect, the commander can--

- Limit the options available to the enemy through careful site selection and preparation.
- Economize his own force and accept risk somewhere else.
- Always form and retain a reserve at battalion level and above, normally

composed of mobile maneuver forces much like an armored group in mechanized forces).

- Shift the mass of his own firepower as required.

Detailed intelligence and preparation are keys to this effort. In order to preserve his force, gain time to mass his forces, or attrit the enemy, the commander may surrender some ground the enemy.

Tenacity

An OPFOR unit ordered to hold a position must do so with the utmost stubbornness. It can give ground or withdraw only with the permission of the commander who gave it the original mission to defend. This tenacity allows other units to maneuver.

Maneuver

Tenacity in defense does not mean immobility. The OPFOR can maneuver forces and firepower from less threatened sectors to meet the enemy's main attack and disrupt his concept of battle. It can maneuver in front of the main defense and counterattack. The maneuver of forces and fires is the basis of activeness in the defense. A maneuver executed rapidly and covertly can put defending units in position to inflict decisive damage on a numerically superior enemy force. Of course, such activeness is impossible without firmly holding defended positions.

Firepower

The OPFOR deploys all available fire support assets at maximum ranges. It attempts to start engaging the attacker's forces from the earliest opportunity. It is also possible to concentrate the fires of dispersed weaponry on key sectors and so break up the enemy attack.

Flexibility

Agile execution and flexible planning are prerequisites for a successful OPFOR defense. All OPFOR planning and execution is mission-focused; however, there is always built-in flexibility that allows the commander to seize the initiative away from the enemy. Although the attacking enemy normally decides the time and place of combat, commanders agile enough to counter or elude the brunt of the enemy main attack can strike back effectively.

Flexibility starts with detailed planning, based on analysis of the enemy's courses of action and a sound understanding of the enemy's intent. Basic plans gain flexibility through the use of--
- Organization in depth (with second echelon or reserves).
- Supplementary positions.
- Deception plans.
- Counterattack plans.

The key to this is early detection and confirmation of the enemy's main effort. Once the commander controls the thrust of this effort, he can maneuver against exposed flanks, the enemy's rear, and vulnerable logistics and C^2 facilities.

Aggressiveness

The more aggressive the defense, the more stable it is. OPFOR commanders at all levels seize every opportunity to take local offensive actions during a defensive battle.

FORMS AND TYPES OF DEFENSE

When the OPFOR finds it impossible or inadvisable to attack, it can assume an area defense on a hasty or deliberate basis. It can prepare the defense in advance or organize it in the course of battle, in the absence of direct contact or in contact with the enemy.

Defensive Forms

OPFOR military art recognizes two primary forms of defensive action: the **area defense** and the **mobile defense**. However, the focus here is on the area defense, since the mobile defense is only practicable at the operational level.

Area Defense

The area defense is the **principal form of OPFOR defense**. It is the defensive pattern most commonly used, regardless of the circumstances under which the OPFOR has adopted the defense. Area defenses are particularly well-suited for use in rough terrain, relatively shallow sectors, or when the OPFOR lacks sufficient maneuver potential compared to the enemy. When defending against more mobile forces in close terrain, area defenses are on high-speed avenues of approach. Most OPFOR maneuver units deploy to retain critical ground; they employ positions in depth and maintain mobile reserves and counterattack forces. At division level and below, however, area defense is most likely to use reserves to block and reinforce than to counterattack. The area defense centers around a relatively static framework of positions, focused on retention of terrain. It seeks to absorb the enemy within an interlocking series of positions and destroy him by fires. (See Figure 6-1.) Aggressive reconnaissance and counterreconnaissance, employed along with local counterattack forces at all levels, aim to constantly attrit the enemy force as it enters the defense area. A security zone is normally an integral part of the area defense assumed out of direct contact.
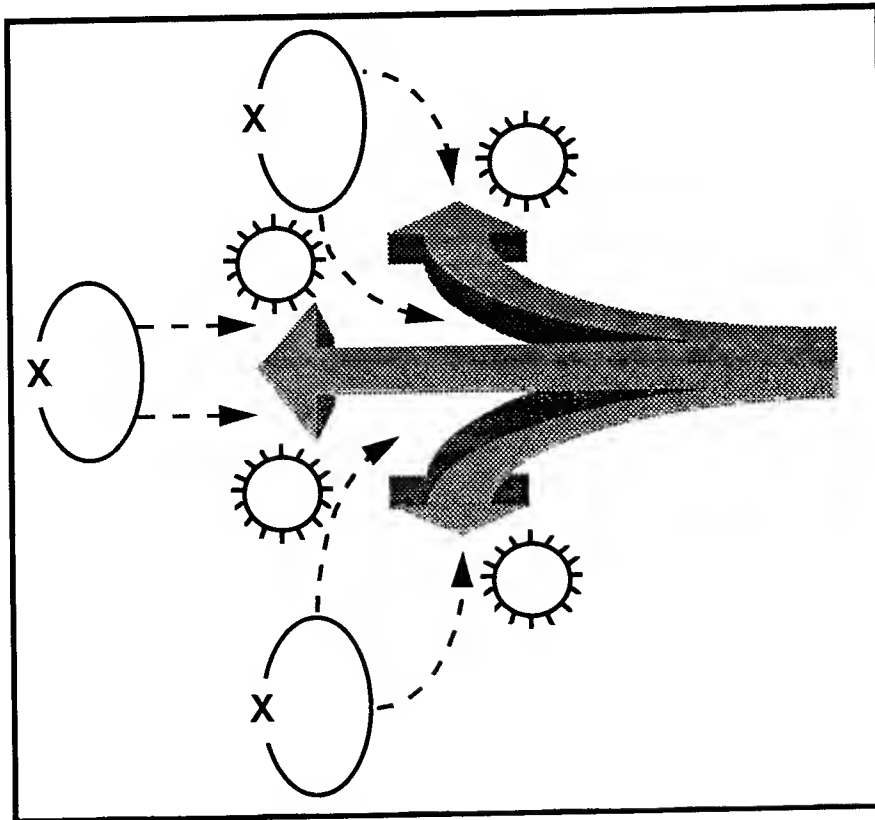
Figure 6-1. Area defense.

Mobile Defense

Although OPFOR military art recognizes the mobile defense, probably only an expeditionary army would employed it. It requires an army-sized force with a predominance of mobile formations. It also requires space and conditions favoring counterattacks. A mobile defense seeks to destroy the enemy through a combination of offense, defense, and delay. The emphasis is on committing the smallest force possible. The forward-defending force trades terrain for time and diverts the enemy's attention from the main force. This allows the enemy to advance into a position that exposes his flank to counterattack by a large maneuver reserve, which comprises the bulk of OPFOR combat power. Such large-scale counterattacks offer the OPFOR commander the opportunity to gain the initiative and transition to the offensive. However, they are practicable at only the operational level of war.

Types of Defense

The OPFOR characterizes its defenses based on the amount of preparation time: They are either deliberate or hasty.

It organizes a **deliberate** defense whenever it has sufficient time to prepare its defensive positions; this preparation may take 24 to 48 hours. During this time, the defenders can--

- Conduct reconnaissance.
- Prepare and occupy individual fighting positions and platoon and company strongpoints.
- Organize a security zone and main defenses.
- Fortify the terrain and create obstacles.
- Plan fires.
- Organize logistics support.
- Rehearse.

The OPFOR adopts a **hasty** defense when it has very little time to organize a defense or when its advance formations have stopped their offensive action. In the hasty defense, the width of the frontage is smaller, with smaller gaps between strongpoints. This means that the OPFOR must accept greater risks in other areas. Because of this, the commander may retain a larger-than-normal reserve.

Transition to Defense

The enemy is the determining factor dictating the method of shifting to the defense. Depending on enemy proximity and the nature of the battle, an OPFOR unit can shift to a defense before battle occurs or in the course of battle. Basically, the transition occurs either under conditions of direct contact or in the absence of contact.

In Direct Contact

The OPFOR transition to the defense **in direct contact** occurs most often in the course of an attack. It can also occur when repelling counterattacks, consolidating captured lines and securing flanks of attacking troops, or with an unsuccessful outcome of a meeting battle. The OPFOR must organize the defense under enemy fire in a short time period, not always on a favorable line, and often on a line with no engineer preparation. Thus, this method of transition to the defense is the most difficult.

When transitioning to the defense in direct contact, the OPFOR faces a situation in which units may have to perform several missions simultaneously:

- Conduct a firefight against a defending or counterattacking enemy.
- Repel air strikes, including helicopters.
- Take measures to recover from enemy use of nuclear, chemical, high-precision weapons and fire strikes.

- Realign the combat formation.
- Replenish ammunition, fuel, and other supplies.

Shortages of personnel, combat equipment and supplies due to losses suffered during the attack can further complicate the situation.

Out of Direct Contact

The OPFOR can assume a defense before the battle begins, **out of direct contact** with the enemy. The main difference between defense in contact and defense out of contact is the absence of a **security zone** in the former. Under the latter condition, the purpose of transition to a defense is to cover areas of possible contact, in order to repel a possible enemy strike or support the deployment of additional forces. Transition to a defense can occur where an attack is inadvisable or impossible for a number of reasons. Follow-on forces shift to a defense in the absence of contact.

ORGANIZATION OF DEFENSE

OPFOR commanders follow the tenets of stability and activeness in planning the defense. The OPFOR achieves stability by the integration and coordination of all combat assets to defend against nuclear, chemical and high-precision weapons, artillery, tanks, aviation, and air insertions. Activeness in defense involves decisive counterattacks, maneuver of forces and fire, continuous combat, and artillery counterpreparations. Frontages and depths vary considerably with the circumstances in which the unit adopts the defense, the importance of the sector, the strength of the defending forces, and the assessment of the threat. (See Figure 6-7 below for an example of a motorized infantry division deployed in the defense.)

Areas of Responsibility

In OPFOR terminology, a division or a separate brigade defends a **zone**, a divisional brigade defends a **sector**, and a battalion an **area**. Companies and platoons defend **strongpoints**. The division defense comprises a series of **positions** deployed in depth. Each position consists of company strongpoints with integrated obstacles and a fire plan. The **first position** is the most strongly held. Positions in depth may be only partially occupied, but they provide a line to which forces defending farther forward can withdraw on order.

Combat Security Forces

The type of combat security force the OPFOR uses in the defense depends on the circumstances in which it adopts the defense and the level of command involved. A unit does not always deploy a combat security force, particularly when transitioning to the defense in contact with the enemy. In this case, the defending force may have to occupy a line while in action and hold it to the best of its ability. Figure 6-2 shows the types of com-bat security forces the OPFOR can employ. The uses of the various types are as follows:

Security Zone

The OPFOR establishes a **security zone** when organizing the defense **out of contact** with the enemy. The region, army, or division commander makes the decision to establish a security zone in front of the first-echelon divisions. If the depth of the army's deployment permits, second-echelon divisions can prepare a security zone between the rear of the first-echelon divisions and their own front-line. Within his zone of defense, the division or district commander is responsible for the detailed organization of the security zone. The security zone extends across the entire zone of responsibility. If established by the region or army, the security zone boundaries do not necessarily conform to lateral division boundaries. If established by division, however, it would match the division boundaries. The zone is at least 15 km deep and can extend to a depth of 50 km. It is at least far enough forward to prevent aimed direct fire from being placed on the main defense belt (line); however, it normally extends beyond that.

Mission	Deployed when Defending		Command Levels			Distance in Front of Forward Edge of
	In Contact	Out of Contact	Directed by	Deploying Force	Fighting the Battle	Main Defense
Forward Detachment in Security Zone	No	Yes	Region/ Army/ Division	Division/ District	Up to Battalion	Up to 15 km
Forward Position	Yes	Yes	Division/ District/ Brigade	Brigade	Company	Up to 5 km
Combat Security Outpost	No	Yes	Brigade	Battalion	Platoon	Up to 3 km

Figure 6-2. Types of combat security forces.

When transitioning to the defense **in direct contact**, the OPFOR may not have a security zone. However, it could still have a **covering zone**. This is a smaller, shallower version of the security zone, at least sufficient to keep the defense out of enemy direct observation and fire.

The security force's size and composition depend on the factors mentioned earlier. The security force deploys on the best terrain to inflict maximum damage on the attacking enemy and uses obstacles and barriers extensively. When faced with envelopment or decisive engagement, the forces in the security zone attempt to withdraw under cover of artillery fire and return to the main defense belt (line).

Forward Detachment

A district or division commander normally deploys an FD to fight in the portion of the security zone for which he is responsible. The size of this FD can vary, depending on the forces available. However, it is usually a reinforced battalion from a second-echelon brigade. The mission of the FD is to--

- Delay, disrupt and destroy the advancing enemy.
- Force him to deploy or attack on unfavorable directions.
- Determine his grouping and main effort.

Collectively, these actions allow for the district's or division's first-echelon brigades to deploy into and continue preparation of positions in the main defense belt (line).

A battalion-sized FD establishes a series of reinforced **company-sized positions** along the enemy's expected main avenue of approach. Forces generally concentrate in the brigade sector anticipated to face the enemy

main attack. Defensible terrain is the primary consideration for their positioning, which may be at any depth within the zone. These companies conduct a series of delays, maneuvering back to subsequent positions when endangered by decisive engagement or encirclement.

In a well-developed security zone, each company has multiple fighting positions:
- An **initial position**, which is the most forward in the security zone.
- Several **subsequent positions**.
- The **forward position**, which is the closest position to units defending in the first echelon of the main defense belt (line).

The initial position may be up to 15 km in front of the forward edge of the main defenses. From there, companies maneuver in bounds to subsequent positions. These positions are in lines separated from each other by up to 3 km. Forward positions are normally 3 to 5 km forward of forces defending in the first echelon of the main defenses. All the above distances can vary, based on the terrain. Ideally, engineers would prepare all three types of positions. Much of the engineer work, especially for forward positions, might take place during peacetime contingency preparations. The intent of the forward position is to emulate main defense positions; it should be outside the enemy's direct fire range. When circumstances do not allow for development of a full security zone, forward positions may be the only fighting positions forward of the main defense.

Forward Positions

When the separation from the enemy is not great enough for creating a security zone (or covering zone), the OPFOR uses **forward positions**. It also can use these when it does form a security zone, to imitate the main defense, cause the enemy to conduct premature

artillery preparations, and aid in the disengagement of the FD. These forward positions deploy up to 5 km in front of the first echelon of the main defenses. The division orders forward positions, but first-echelon brigades plan them in detail. Each first-echelon brigade creates a forward position and mans it with a company from the brigade's second echelon. The primary mission of a forward position is to mislead the enemy about the location of the forward edge of the defense. Forward positions are sometimes useful when going over to the defensive in contact with the enemy. They remain on the line of contact while the main body of the brigade withdraws to a more favorable line for defense.

Combat Security Outpost

If a brigade does not deploy forward positions, it can order first-echelon battalions to organize **combat security outposts**. These outposts consist of a platoon positioned up to 3 km in front of the forward edge of the defense, on the most threatened axis. The combat security outpost's primary mission is to prevent enemy reconnaissance and small groups from penetrating to the battalion's position. It receives fire support from the battalion's mortars and any available artillery and direct fires from the forward edge of the defense. Once the enemy begins to deploy for a major attack, the outpost withdraws, generally under cover of smoke and artillery fire.

Main Defense Belt (Line)

An expeditionary army calls its main defenses a **belt**, while a region refers to them as a **line**. Creation of a belt connotes the linking of strongpoints across multiple defensive areas. The linearity of the army defense allows this, whereas the region defense does not. In either case, the main defense belt (line) relies on defense in depth. The basic element of the main defense belt (line) is the battalion defense area; this in turn comprises company and platoon strongpoints. The OPFOR establishes strongpoints to protect terrain key to the defense. The units occupying the strongpoints prepare a defense with alternate and supplementary firing positions for all weapons. These units plan their fires to be mutually supporting and plan for the use of kill zones. Using wire as the primary means of communication, the units construct a network of communication trenches linking weapon positions with supply, C^2, and fighting positions. Units dig in vehicles and other equipment to the maximum extent possible, including provision of overhead protection.

Typical Frontages and Depths

There is no "doctrinal" frontage or depth that a given OPFOR unit will defend. These dimensions of the defensive battlefield depend on the specific factors of mission, enemy, terrain, troops, and time available. They also depend on the specific unit's place in the overall combat formation, its echelonment, and its equipment. Figure 6-3 shows some **typical** frontages and depths for motorized and mechanized forces. These represent only generalized guidelines, from which actual defenses can vary considerably according to the situation.

At battalion level and above, for example, mechanized units with armored fighting vehicles should be able to defend a larger area, due to their mobility and ability to move under armor protection to alternate positions. At lower levels, however, a dismounted motorized infantry squad or platoon might defend a slightly wider frontage than its mechanized equivalent, since all nine squad members would dismount from a truck. Only seven of the nine would dismount from an APC/IFV. (The APC/IFV driver and gunner remain in the vehicle, which occupies its own firing position. That position can be in the center or on a flank of the squad defensive position, or up to 50 m to the rear of the squad trench.)

Motorized Unit	Frontage	Depth
Division	6-12 km	8-10 km
Brigade	3-6 km	3-5 km
Battalion	Up to 3 km	1.5-2 km
Company	Up to 1 km	Up to 1 km
Platoon	400-500 m	50-300 m
Squad	Up to 150 m	N/A

Mechanized Unit	Frontage	Depth
Division	12-20 km	8-12 km
Brigade	6-10 km	3-5 km
Battalion	3-5 km	1.5-2.5 km
Company	1-1.5 km	Up to 1 km
Platoon	Up to 500 m	Up to 200 m
Squad	Up to 150 m	N/A

Figure 6-3. Typical defensive frontages and depths for motorized and mechanized infantry units.

Echelons

As in the offensive, the OPFOR can deploy in **one or two echelons**. A two-echelon deployment is usual on the most threatened axis and a single-echelon deployment is more common on secondary axes. Defenders may also adopt single-echelon formations after suffering heavy casualties. Within a formation, different levels of command can use different echelonment schemes. For example, even if a division deploys in two echelons, one or more of its brigades could be in a single-echelon formation. A brigade could deploy in a single echelon, while its subordinate battalions could have two. A second-echelon brigade or battalion may or may not have the same number of echelons as its first-echelon counterpart. Platoons normally deploy in a single echelon, and a squad always does.

In the defense, second echelons can have the following tasks:

- Hold their main position against an enemy penetration.
- Reinforce first-echelon units where the enemy threatens a penetration.

- Maneuver to firing lines or to launch counterattacks.
- Destroy enemy airborne or heliborne assaults.

Maneuver Reserve

Forces deployed in one echelon retain a maneuver reserve. Unlike the offensive combat formation, a district, division, or brigade in the defense can form both a second echelon and a small reserve. For a district or division, the reserve normally consists of a battalion, for a brigade a company, and for a battalion a platoon. However, a commander can retain a smaller reserve if the situation warrants. In divisions or brigades that lack tank battalions, the commander probably lacks sufficient forces to form both a second echelon and a reserve. Even in mechanized divisions and brigades that normally have a tank battalion, parts of that battalion would probably reinforce first-echelon mechanized infantry units, leaving only a tank battalion (minus) as a reserve. Maneuver reserves can receive counterattack missions. However, more likely missions for reserves at division level or below are to fill gaps in the defense in blocking and reinforcing roles.

Antitank Reserves

In infantry units, antitank (AT) reserves are present at every level from battalion upwards. Built around an AT unit, they generally act in conjunction with a mobile obstacle detachment. (For more information on AT reserves and mobile obstacle detachments, see Chapters 8 and 11, respectively.)

Antilanding Reserves

Because the OPFOR perceives a threat from airborne/airmobile troops, commanders commonly designate an antilanding reserve. A commander can designate part of the force's second echelon for this role or create a specific reserve. If the commander designates an antilanding reserve, he usually would not form a maneuver reserve.

Special Reserves

In addition to their mobile obstacle detachments, brigades and divisions try to retain an **engineer reserve** of earthmoving and obstacle-creating equipment. This reserve can deploy to strengthen defenses on a particularly threatened axis during the course of the battle. (See Chapter 11.) Divisions and brigades may also retain a **chemical defense reserve**. (See Chapter 14.)

Armored Groups

Mechanized infantry or tank units can form armored groups at **battalion or company level** as additional maneuver assets in the defense. They are temporary, composite groupings of tanks and APCs/IFVs, usually formed after the infantry has dismounted in a defensive strongpoint. A company armored group can consist of one to two tanks and two to four APCs/IFVs (or vice versa), commanded by an assistant platoon leader. A bat-talion armored group can have two to four tanks and four to six APCs/IFVs (or vice versa), commanded by a platoon leader from a second-echelon company. Armored group vehicles may come from first- or second-echelon units that are defending positions away from the most threatened axis.

As a rule, tanks and APCs/IFVs designated for use in an armored group initially deploy in the strongpoints of their parent platoons. Their crews carry out preparations for the defense according to their platoon leader's plan. Once the basic work of preparing the position is complete, the battalion or company commander can organize an armored group. He does this by withdrawing vehicles from their firing positions in strongpoints and concentrating them in concealed areas in dead space, woods, or other cover behind the first-echelon positions.

Once formed, an armored group has two or three firing lines assigned to it for covering gaps between strongpoints and to the flanks. After moving to the concealed area, the vehicle crews camouflage the armored group, and may establish dummy vehicles or false heat sources away from the position. They prepare routes to the firing lines and firing positions on them, as well as routes back to their original platoon strongpoints.

Once the battle begins, the armored group remains in its concealed area until ordered to occupy a firing line to block a threatened penetration. On receiving the order to move, the armored group forms into a column and moves forward swiftly, often under cover of smoke, to occupy firing positions. All or part of the armored group may return to its original platoon strongpoints, if that seems a more effective way to use the vehicles. Together with first-echelon units, the armored group concentrates fire against the bulk of

tanks and other armored vehicles to inflict damage on the enemy ahead of the OPFOR forward edge. Subsequently, it can reposition (possibly to a flank) to destroy enemy forces that penetrate the defense or threaten to envelop the company strongpoint or battalion defense area.

Ambushes

Ambushes are a common feature of any OPFOR defense. In size, they vary from individual weapon systems to a platoon and generally come from second-echelon units. They deploy on likely axes of approach, on flanks and in gaps and between first- and second-echelon positions. The goal of the ambush may be to--

- Reduce the enemy's strength before he reaches the main defenses.
- Slow his advance.
- Deceive or serve as a decoy.
- Harass or separate enemy forces.

When available, tanks, APCs/IFVs, AT weapons, and helicopters can participate in ambushes.

System of Fire

An OPFOR commander constructs a **system of fire** bringing all available fires on the enemy as he approaches. The system provides continuous fire at the forward edge, on the flanks, and within the defensive position. In addition, it should allow rapid concentration of fire against threatened axes. The goal is to engage the attacker with a growing intensity of fire as he approaches the forward edge of the defense. Fire begins with artillery concentrations and barrages on likely axes, chokepoints, and deployment lines. The OPFOR recognizes two fundamental considerations of fires in the defense: depth and dispersion.

Depth

The first consideration is that the defense must provide sufficient depth for effective fire and maneuver. OPFOR weapons engage the enemy at as great a range as possible, providing an increasing volume of fire as he nears the defensive positions. Fire support weapons deploy in positions that allow them to shift fires against threatened axes within the defensive position. To counterattack enemy penetrations, units occupying positions in the depth of the defense must be able to maneuver and concentrate rapidly.

Dispersion

Conducting a defense under the threat of enemy employment of high-precision weapons and weapons of mass destruction demands dispersion. **Platoon and company strongpoints** are the basis of the OPFOR defense. Increased dispersion between these strongpoints leads to problems in fire support coordination and troop control. An excessively dispersed defense does not offer sufficient resistance to accomplish defensive missions. As a result, the OPFOR cautions its commanders not to achieve dispersion at the price of effective defense.

Kill Zones

The OPFOR ties all available obstacles into an integrated fire plan designed to totally destroy advancing enemy forces. It calls this concept a **kill zone**. Kill zones may result from a maneuver of fire, weapons, and units in the course of a defensive battle. They may be either within the main defenses or forward of them in a security zone, but are always contained physically within the defensive positions. The depth of kill zones can vary, generally equating to the range of available direct fire weapons. They can have a frontage of 900

to 1,000 meters when created ahead of the forward edge or 500 to 800 meters when created within the main defenses.

The units covering a kill zone first bring direct fire weapons to bear as the enemy advances and then seal the penetration with indirect fires. The defenders attempt to trap the enemy, stop his advance, blunt his penetration, and then destroy him through fires and counterattacks.

The fire plan of direct and indirect fires ties into the existing strongpoints and obstacles. The OPFOR commander carefully chooses suitable natural obstacles that lend stability to the defensive positions. The addition of manmade obstacles, including minefields, enhances these natural obstacles. Obstacles on the edges of the kill zone serve to contain the enemy force, preventing his escape. The defenses in the kill zone are well camouflaged and include the use of dummy weapons and positions to deceive the enemy as to the true locations of the strongpoints. Reserves carefully locate where they can counterattack effectively once the fires have lifted. Figure 6-4 shows an example of the integration of platoon strongpoints, system of fire, and obstacles in a motorized infantry company defense.

ARTILLERY SUPPORT

In the defense, as in the offense, the fire planner utilizes all available fire support to carry out the commander's plan. Emphasis is on the integration of artillery, air, and AT assets into an overall defensive fire plan. The commander and staff produce several variations of the plan, based on the approach and deployment options open to the enemy. Maneuvering massed firepower against key groupings at the crucial moment is critical. Primary artillery missions in defense are **counterpreparatory fires** and **fires against an attacking enemy**. Other defensive artillery missions include support of forces in the security zone and at forward positions, as well as covering gaps and open flanks with fire.

Counterpreparatory Fires

Counterpreparatory fires are rocket, missile, artillery, and air strikes intended to annihilate or neutralize enemy forces preparing to attack. These fires should surprise the enemy and should start before the enemy's preparation fires. The OPFOR would use all appropriate fire support to reduce the effectiveness of the enemy's preparatory fires.

Fires Against Attacking Enemy

Fires against an attacking enemy consist of four phases. They are as follows:
- Phase I: Fire interdiction of advancing enemy troops.
- Phase II: Fire to repel the enemy attack.
- Phase III: Fire support of defending troops.
- Phase IV: Fire destruction of the enemy during a counterattack.

For further detail on each of these phases, see Chapter 7.
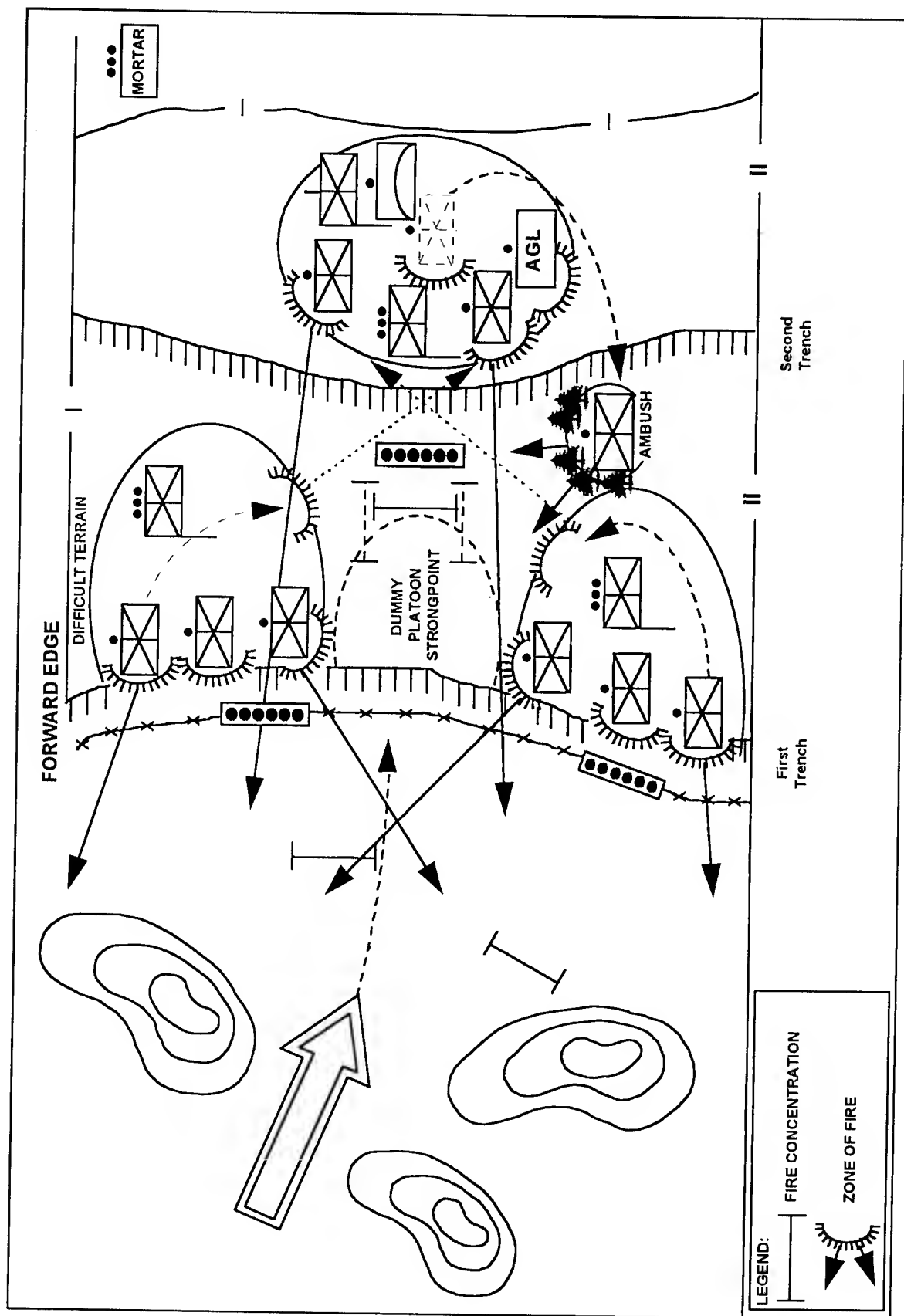
Figure 6-4. Motorized infantry company in defense (example).

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ENGINEER PREPARATION

The OPFOR divides engineer preparation of the defense into three stages. Obstacles, both natural and manmade, play an important role in the defense.

First Stage

Barbed wire and other obstacles are emplaced in front of the position and fields of view and fire are cleared. Pits or trenches are prepared at the primary position of each fighting vehicle, crew-served weapon, and individual infantryman. Command observation posts and medical posts are dug in. This normally takes 10 to 12 hours.

Second Stage

During the second stage of preparation of the position, fighting vehicles and weapons systems are provided with alternate fire positions. Trenches are linked until they run continuously across the battalion frontage. Communication trenches are prepared. The OPFOR allows an additional 10 to 12 hours for this phase. By the end of this phase, primary firing positions usually have 18 inches of overhead cover.

Third Stage

Further preparation of the position includes improvement of existing trenches and positions, laying further obstacles and preparation of firing lines and routes for AT reserves and second echelons. Communication trenches may be improved for use as fighting trenches. Dummy positions are prepared in intervals between strongpoints.

Obstacles

The OPFOR's intent is for obstacles to break up the enemy's assault, strip away the infantry's supporting armor, and force the enemy into areas where concentrated fires of all weapons can destroy him. Obstacles placed within the main defense area confine the enemy within kill zones and support the employment of the reserves.

Natural and manmade obstacles slow, disorganize, and canalize the enemy force, either alone or with preplanned fire concentrations. The OPFOR stresses the use of natural obstacles: lakes, rivers, marshes, escarpments, and densely forested areas. Manmade obstacles may include minefields, AT ditches, wire entanglements, and abatis. The depth of the obstacle plan depends on the time and engineer resources available.

The OPFOR's use of various obstacles, especially minefields, is an important advantage in the defense. They reduce the rate of forward movement, deployment, and assault of enemy tanks and mechanized vehicles. They increase the effectiveness of both AT weapons and artillery fire by canalizing attacking enemy forces into kill zones and ambushes and/or preventing their escape from them. The OPFOR also places mines and obstacles to protect the flanks of its defensive positions. It may attempt last-minute laying of minefields; means for this include mechanical minelayers, multiple rocket launchers (MRLs), and rotary- and fixed-wing aircraft. Minefields also can be emplaced by hand. As a rule, the OPFOR covers minefields and obstacles with direct and indirect fires.

ANTITANK DEFENSE

The OPFOR considers the correct employment of AT assets essential to the defense. (See Chapter 8 for further details on AT support in the defense.) Each maneuver unit from company upward plans AT defenses, which include obstacles and mines. If necessary, field guns and air defense artillery weapons can serve in an AT role. AT defenses and weapons deploy along likely avenues of approach into which the defenders try to canalize the enemy to form kill zones. AT defenses cover everything from the security zone back through the second defense line, with the majority in the main defense line.

The OPFOR AT defense system comprises the following elements:

- Company and platoon strongpoints containing well-sited AT weapons.
- Tank ambushes set up throughout the defense.
- AT reserves placed to respond to enemy tank penetrations.
- Tanks within the second echelon to bolster the first echelon or to counterattack.
- Mobile obstacle detachments.
- Artillery in the direct fire role, in forward positions and from positions in the depths of the defense.

- AT obstacles covered by fire and complementing the maneuver of fires and forces.
- Maneuver by AT forces and weapons.

The OPFOR concentrates AT guns and antitank guided missiles (ATGMs) by platoon and battery. It plans multilayered crossfires, long-range fires, and fires to the flanks and rear. Cooperation between guns and ATGM systems is essential for adequate AT defense. A commander positions his AT reserve to undertake multiple missions: blocking, counterattacking, reinforcing, and providing rear area security.

Attack helicopters mounting rockets and ATGMs provide mobile, quick reaction, AT reserves. The OPFOR emphasizes use of these assets to defeat tank penetrations or flanking maneuvers.

COUNTERATTACKS

Every level of command, beginning with company, makes counterattack plans. Although reserves normally are the primary counterattack force, other units may receive this mission, particularly those in the second echelon. The approval of the next-higher commander is normally necessary prior to launching the counterattack.

Section II. Military District and Separate Brigades

Districts defend as part of the region first echelon in the main defense line or as the region second echelon in the second defense line. This section focuses on the security zone and main defense line. Organizational principles and disposition of forces are generally the same for both the main and second defense lines. A military district may have one or more separate brigades (usually 3 to 4), augmented by organic and allocated resources. These structures and their possible combat support and combat service support organizations vary widely. For the sake of illustration, the discussion below assumes that districts have received everything that they could receive during wartime. It also assumes the most likely case, in which the district assumes the defense while still out of direct contact with the enemy.

MISSIONS

District missions mirror those of the region defense line of which they are a part, either the main or second defense lines. The primary mission is to protect the territorial integrity of the district and stop the invading enemy from advancing farther into the interior of the State.

SCOPE

Generally, the overall frontage of a district defending in the main defense line extends across the district. Across this general, irregular line, placement and number of avenues of approach dictate the actual dispersal of forces. Brigades defend on the main avenues of approach leading into the State's interior. Therefore, brigade frontages are more important in determining the scope of the defense. Light and motorized separate infantry brigades normally defend a frontage of 3 to 6 km. Mechanized and tank brigades normally defend a frontage of 6 to 10 km. In mountainous or open terrain, defensive zones are wider with a greater dispersal of forces; in normal terrain containing a key enemy axis, zones are narrower with larger concentrations of forces.

LINEARITY

Generally, districts within the region's main defense line cannot conduct a linear, contiguous defense. This is due to the amount of terrain they must defend and the dispersal of forces. Thus, a district in the main defense line would probably deploy an irregular disposition of brigade-sized concentrations on key terrain along important avenues of approach. A district in the second defense line may have a more linear defense. This is due to the converging of the avenues of approach leading into the interior of the country and a corresponding concentration of forces along those avenues.

ORGANIZATION OF DEFENSE

The following are components of the district defense within the region's security zone and the main defense line:

Security Zone

The security zone is an area in front of the main defense, designed to delay, weaken, and deceive the enemy. Although the creation of a security zone is an operational decision made by the region commander, district commanders control the forces contained within their respective areas of responsibility within the zone. (See Figure 6-5.) The frontage of the district security zone would match the frontage for the district's portion of the main defense line. Depth can range out to 50 km, but varies based on the enemy and the terrain. Basically, it extends from the main defense line to the border. Specific activities within the zone fall into two general mission categories: reconnaissance and security.
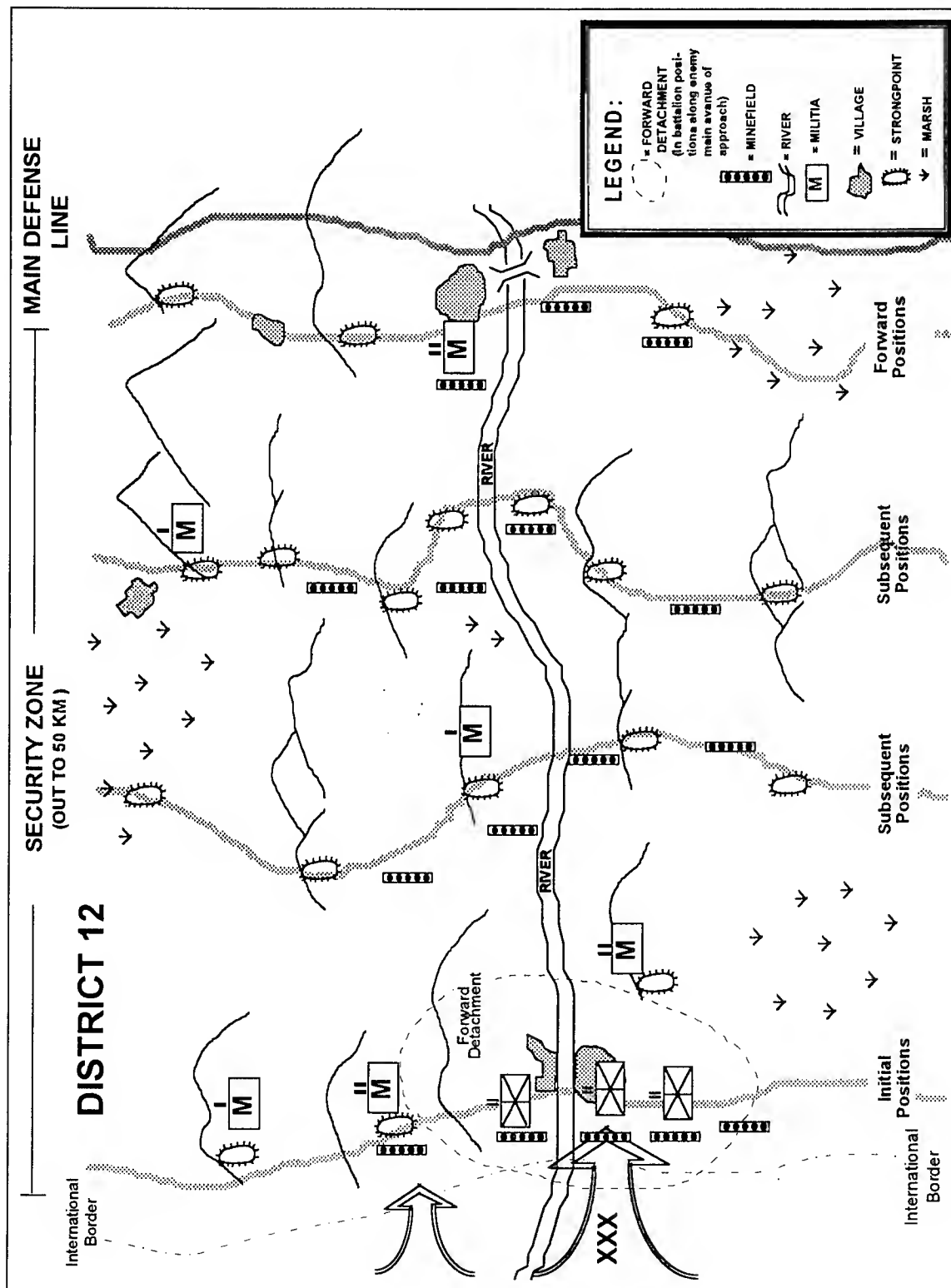
Figure 6-5. Military district security zone (example)

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Reconnaissance

The primary ground reconnaissance mission within the security zone is to warn of enemy movements. This includes reporting on the size and location of units, troop concentrations, C^2 elements, locations of logistics and reserve elements, and probable main thrusts. The district's ground reconnaissance assets normally come from its reconnaissance and electronic combat (EC) battalion.[2] This battalion's long-range reconnaissance company tends to deploy in single vehicles or small dismounted elements, establishing observation posts on dominant terrain. The other reconnaissance companies deploy in small patrols of three to four vehicles along the enemy's expected avenues of approach.

District-level reconnaissance responsibilities generally include the entire depth of the security zone. If the district has a reconnaissance and EC battalion, those assets tend to cover the most forward portion of the security zone. They also concentrate on the most likely area for the enemy's main attack. Ground reconnaissance assets from the separate brigades in the main defense line cover a band closer to their own forward edge. Based on district reconnaissance reports, brigade reconnaissance could adjust or refocus its efforts. If, however, the district does not have a reconnaissance and EC battalion, brigade assets are responsible for the entire depth of the security zone. For further information on ground reconnaissance, see Chapter 4.

Militia forces located in towns or villages along the enemy's avenues of approach may participate either actively or passively in the reconnaissance effort. Their participation may be point observation-type missions conducted at the request of reconnaissance units in the security zone, or simply reporting what they have seen to patrols from the district or separate brigade reconnaissance companies.

Security

All forces conducting security missions within the zone are part of the security echelon. The depth to which security echelon forces deploy depends on the depth of the security zone, the terrain, and the organization and type of force. Security echelon forces established by the district commander cannot withdraw to subsequent positions or from the security zone without his consent. This degree of control is necessary because the district commander may be controlling multiple units in the zone, and he must consider the effect one unit's moving might have on the other units. For example, artillery may deploy forward in the zone to support several units, and the movement of one unit may expose and endanger the artillery forces. Under ideal conditions, units selected to conduct security echelon missions would be motorized or mechanized infantry. Forward detachments and combat security outposts are the two primary types of security echelon forces.

When the region commander establishes the security zone, the district commander normally forms one **forward detachment** to fight in the portion of the security zone for which he is responsible. The size of the FD, normally a reinforced battalion or a brigade, depends on the forces he has available to conduct his defense. Ideally, the basis of the FD is a motorized or mechanized infantry brigade. These have the needed mobility and organic combat support and combat service support. A "high end" district with three or four brigades can afford to deploy an entire brigade as its FD. Districts with fewer brigades would use only a battalion. The district

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[2] Discussion of EC assets comes later, under the "Military District Combat Support" heading.

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commander could take this battalion from one of two sources: from a brigade in the district second echelon or from a first-echelon brigade defending along a less threatened approach or series of approaches. The district second echelon is the primary source.

From its **initial position**, the FD conducts a series of delays, maneuvering to **subsequent positions** when endangered by decisive engagement or encirclement. Its final position forward of the main defenses is called the **forward position**. These delays allow for the district's first-echelon brigades to deploy into and prepare positions in the main defense line.

First-echelon brigades provide local tactical security. As with the district commander's control of the FD, control of combat security forces rests with the commander establishing the force. In the absence of a security zone, or at the direction of the district commander, brigades may man **forward positions** with a company from the brigade's second-echelon battalion. The district commander may direct this action to facilitate withdrawal of the FD from the security zone. There is no difference between these forward positions and those previously addressed. In either case, they are up to 5 km in front of first-echelon positions in the main defense line.

First-echelon battalions may also establish platoon-sized **combat security outposts** up to 3 km forward of their positions. These outposts have the same missions as forward positions. It is normal to establish them in the absence of occupied forward positions or on secondary avenues of approach when forward positions are manned. The brigade commander directs their establishment, but the battalion commander usually chooses the specific location.

Light infantry units, if acting as part of the security echelon, are not able to delay in the same manner, and normally have orders to allow the enemy to bypass them and conduct partisan-type combat. Their most likely employment is within prepared forward positions.

Militia forces in villages or towns encompassed by the security zone conduct normal security echelon missions. The size of the force depends on population of the town. Around large ports and in more populous areas, militia light infantry battalions may have the missions to deny the enemy resources and control of the population. They may also control lines of communications hubs by strong-pointing towns along enemy avenues of approach. Even smaller groups are effective for conducting harassing or delaying actions at chokepoints, such as in restrictive terrain or at bridges. Normally, smaller militia forces in the security zone wait until major enemy combat formations pass and then conduct ambushes or raids against C^2 facilities or logistics lines. However, if the invasion occurs before the region can deploy its normal security echelon forces, the militia conducts the above actions to delay the enemy until those forces deploy. In this role, militia light infantry may use the same types of initial, subsequent, and forward positions as used by company- or battalion-sized elements of an FD. Some militia may aid in the disengagement and withdrawal of defending FD units.

Main Defense Line

The main defense line constitutes the region's first echelon. It normally contains the combined forces of 2 to 3 districts. Each district defends in one or two echelons, with various reserves. Two-echelon deployment occurs under the following general circumstances: when facing a stronger extra-regional force, on the most threatened axis, or in restrictive ter-

rain. Single-echelon deployment occurs when facing a weaker regional force, when the geographical layout of districts within the region dictates it, or when the defender has suffered heavy casualties. The tactical formation should be deep enough for flexible maneuver by second-echelon and reserve forces, and to reinforce resistance against the enemy's attack.

First Echelon

The primary mission of the first echelon is to prevent penetration of the first-echelon defenses, and to repel enemy attacks with maximum casualties. This includes holding vital terrain and supporting counterattacks by second-echelon and reserve forces. Once the enemy overcomes or shatters the integrity of the defense, the collective mission becomes one of partisan warfare.

Command observation post. The district commander normally places his COP behind the center of the first echelon of the district. This is normally behind the first-echelon brigade expected to face the enemy's main attack. Commanders at all echelons conduct personal reconnaissance, when feasible.

Motorized and mechanized infantry. Two or three brigades would compose the district's first echelon. The building block of the defense is the infantry battalion. Each brigade defense consists of **company and battalion strongpoints** at key points along the enemy's avenues of approach. When possible, company or battalion strongpoints link together until they form a brigade defense line, which comprises all maneuver units within the brigade. However, this is not normally possible across the entire district frontage.

Fortified defense. As time permits, each unit establishes dug-in, camouflaged, fortified positions with strongpoints capable of 360-degree defense. All units establish obstacles and interlocking fields of fire with adjacent units. They construct obstacles, including minefields, particularly in front of the forward edge of the defense. They also employ minefields throughout the defensive system and cover them by observation and fields of fire. Mechanized forces, tanks, and artillery pieces of the first-echelon battalions and brigades are normally dug-in; those in the second echelon or reserve are more mobile.

Light infantry. In the gaps between the strongpoints established along the avenues of approach, light infantry **companies or battalions** may conduct screening missions in difficult terrain. They may also conduct company-sized defenses along less probable avenues of approach through that terrain. Once bypassed, they would revert to partisan-type actions.

Militia. Militia forces also defend within the territorial scope of the first echelon. Normally, these company- or battalion-sized units would defend villages and town, bridges, passes, or other key areas from static positions. They may defend strongpoints in the gaps between regular maneuver units. However, they would not become integrated into the defensive pattern of maneuver units. Both regular and militia units usually have orders to engage the enemy decisively and hold at all costs.

Partisan warfare. Any of these defending units may find themselves bypassed, fragmented, or attrited below unit combat effectiveness levels. When this occurs, they would "go to ground" and conduct partisan-type combat against follow-on forces, command and control facilities, and logistical facilities. Chapter 13, Partisan Operations, in the *Light OPFOR Operational Art Handbook* describes partisan tactics and techniques in detail.

Second Echelon

The primary mission of the forces in the district second echelon is to **contain enemy penetrations** of the first echelon until the OPFOR can launch a counterattack. It may also reinforce the efforts of the first echelon, should the enemy's main attack sufficiently weaken the positions of first-echelon defenders. However, reinforcing the first echelon is the least preferred method of employment because it causes forces to abandon prepared positions.

The second echelon, one-quarter to one-half of available district strength, is usually a brigade. Preferably, this is a motorized or mechanized brigade. A battalion from this brigade may fight as an FD in the district's portion of the security zone prior to taking up its position in the second echelon. The brigade deploys in either one or two echelons, normally positioned behind the first-echelon brigade sector expected to face the enemy's main attack.

Maneuver Reserve

Commanders at **battalion level and above** normally retain a maneuver reserve. Even with a second echelon, the district or separate brigade may form a reserve. Some districts, brigades, or battalions may deploy only a reserve, in lieu of a second echelon. In either case, this is a contingency force. It positions behind the second echelon, on or near the most important or most threatened axis. If there is no second echelon, the reserve may be close behind the first. It is normally a reinforced unit two levels below the parent unit. Thus, for example, a district typically would have a reinforced battalion as a reserve; a separate brigade would have a reinforced company;

a battalion would have a reinforced platoon. If the parent unit has a second echelon, the reserve comes from the second-echelon unit. Otherwise, it would come from a first-echelon unit which the commander does not expect to face the enemy's main attack. The district reserve normally consists of mechanized or tank forces, if available.

Antilanding Reserves

Military regions may direct subordinate districts to form antilanding reserves, ranging in size from platoon to battalion. The number created depends on--

- The assets available.
- The territorial location of the defense.
- The number of probable landing zones within the defensive sector.
- The location of these landing zones in relationship to key OPFOR facilities and terrain.
- The importance placed on protection of these zones against landings

These reserves locate near probable enemy airborne or air assault landing zones, primarily in the district or region rear area. Units for this mission could come from the regular forces; however, this is a more appropriate mission for the militia located in towns and villages near probable enemy landing zones.

MILITARY DISTRICT COMBAT SUPPORT

The following paragraphs give a brief overview of how assets controlled at the district level support the defense. Later chapters contain more detailed, comprehensive information on the organization, principles of employment, and missions of these assets.

Reconnaissance

Various reconnaissance assets contribute to meeting the intelligence requirements of the military district. These assets include both regular ground reconnaissance units, electronic combat (EC) units, and special commando units.

Reconnaissance and EC Battalion

In addition to the ground reconnaissance assets discussed above, the district's reconnaissance and EC battalion includes EC units. EC systems position themselves so that the baseline they establish can focus on the enemy's main effort. They normally deploy forward within the main defense line on terrain that provides good line-of-sight. **Radio intercept and direction-finding** assets provide some limited targeting for artillery. It is accurate enough, however, for jamming or to cue air or ground force reconnaissance. Radar intercept capabilities primarily target ground-based radars. **Jamming** assets target the anticipated enemy main effort. If the security zone provides sufficient depth, any of these assets may deploy initially on high ground in the security zone within the area occupied by the FD. For further information on EC, see Chapter 13.

Commando Battalion

Military districts may have an organic commando battalion. These battalions are identical in composition and mission to the commando battalions within the Special Operations Command. Normally, their wartime and peacetime missions are the same: counterinsurgency missions within State territory. However, they may conduct special reconnaissance and direct-action missions against critical enemy facilities, such as C² nodes and logistics sites. When conducting special reconnaissance, these teams provide deep targeting data for the district. Teams are either squad- or platoon-sized, and are normally inserted forward of the planned security zone during the transition to the defense. Their use in a special reconnaissance role is relatively rare, given the problems of air asset availability for deep insertion. See Chapter 10, Special Operations, in the *Light OPFOR Operational Art Handbook*.

Fire Support

Generally, the aim of defensive OPFOR fire support at district level is to--

- Disrupt enemy preparations for the attack.
- Cause maximum attrition to attacking forces before they reach direct fire range.
- Repel attacking forces that reach or penetrate OPFOR defenses.

The OPFOR definition of fire support includes all combat support actions provided to ground forces by artillery (including AT) and aviation (fixed- or rotary-wing).

Artillery

Districts normally have an **artillery regiment** which includes one howitzer battalion, one or two gun-howitzer battalions, and a multiple rocket launcher battalion. Depending on its mission, the district may receive additional artillery from higher level to form temporary groupings referred to as **military district artillery groups (MDAGs)**. If formed, these artillery groups use the artillery regiment described above as a base. Each MDAG usually consists of at least two battalions of field guns, howitzers, gun-howitzers, or multiple rocket launchers.

The number of MDAGs formed depends on the availability of artillery assets and the frontage over which the district must defend. These artillery groups deploy within the **main defense line** behind the first-echelon brigades, along the primary avenues of approach. If the groups cannot cover more than one brigade sector due to the width of the frontage, they split into two smaller groups. If employed in a single group under these same circumstances, the MDAG is in the brigade sector expected to face the enemy's main attack.

The primary **mission** of the MDAGs is to provide **general support for the district**. This support includes reinforcing the artillery or mortars of first-echelon maneuver brigades, and targeting the main enemy avenues of approach into defensive positions. A brigade receiving additional artillery from the district may have a **brigade artillery group (BrAG)**. (See Chapter 7, Artillery Support, for discussion of the four defensive phases of fire and target priorities for artillery in the defense.)

Antitank

Some districts with primarily defensive contingency missions have a "standard" AT battalion. Such a battalion consists of two AT gun batteries and one ATGM battery. However, a well-equipped district may have an AT battalion composed entirely of ATGM batteries. Although some "low end" districts have no organic AT unit, they could receive an AT battalion allocated from General Staff assets. This could be either a "standard" battalion or one with three AT gun batteries.

Where present, the AT battalion's primary role is an **antitank reserve**. When used in a reserve role, engineer groupings with minelaying capabilities work closely with the reserve. The battalion locates near the second echelon (or maneuver reserve) of the main defense line, along the expected main axis of the enemy. It can screen the deployment of the second echelon or maneuver reserves, secure the flank, or repel enemy armor counterattacks. Secondary missions include reinforcing the AT defense of the first echelon or countering penetrations of the first echelon in the main defense line. (See Chapter 8, Antitank Support, for more detail.)

Air Force

The overall district defensive fire plan incorporates the use of Air Force assets. Most districts have an Air Force control element as part of the staff, even in peacetime, to facilitate support. Otherwise, the region's air control element would allocate an air liaison officer to a district expected to face the enemy's main attack. Brigades receive air liaison officers from the region or district element during wartime, based on mission and the probability of receiving air support. Combat support could include **fixed-wing fighters, fighter-bombers, or attack helicopters**.

The primary goal is to disrupt the enemy's attack plans. The air fire support plan focuses on the enemy's most probable axes of attack. It includes strikes against targets out of artillery range, as well as against enemy forces that have reached, or penetrated, the forward defensive positions. It also includes an aviation counterpreparation plan, with targets that include enemy armor or mechanized forces preparing to attack, as well as their fire support means. See Chapter 9, Air Support, for more detail.

Air Defense

"High end" districts normally have an air defense regiment composed of one surface-to-air missile (SAM) battalion and one towed antiaircraft (AA) gun battalions. Other districts may have no organic air defense unit, but may receive an air defense regiment of three AA gun battalions allocated from national level. Weapons position to the rear of defending first-echelon maneuver brigades to engage aircraft that penetrate the air defenses of those units. The regimental commander positions them along probable enemy air avenues of approach, based on the district commander's guidance. He may also establish air defense ambushes along probable air avenues in gaps between brigade defensive positions. The district may receive some coverage from national air defense assets stationed within the parent region and controlled by the Air Defense Command. (See Chapter 10, Air Defense Support.)

Engineer

Military districts, in peacetime, have organic engineer capabilities ranging from company to battalion. Depending on the enemy's anticipated main effort and the availability of organic engineer resources at the region level, the district could receive more support. Engineer work in the defense falls into the following general categories: reconnaissance, creation of obstacles, fortifying troop positions, camouflaging larger important targets, and supporting counterattacks. Since the majority of district engineer support goes to the first-echelon maneuver brigades expecting the enemy's main effort, these maneuver brigade commanders exercise control of these engineer forces for the duration of their support. If time and resources permit, these engineers prepare positions within the security zone, beginning with the forward position and working outward. (See Chapter 11, Engineer Support.)

Section III. Division and Divisional Brigades

A division may defend as part of either a district or an expeditionary army defense. Standing divisions are more likely to exist in **districts** along an international border, districts that contain historically threatened avenues of approach, or around strategically important cities or facilities. In such cases, the district commander is the division commander. Standing divisions have subordinate maneuver brigades garrisoned within the district respective to their wartime mission. A military region forming an **expeditionary army** would probably have some standing divisions already garrisoned within its subordinate military districts. It could receive additional standing divisions from one or more other regions at the direction of the General Staff.

Divisions defend as part of the army's (district's) first echelon in the main defense belt (line) or as the army's (district's) second echelon in the second defense belt (line). Creation of a belt connotes that strongpoints have been linked across multiple defensive areas. The linearity of the army defense allows this, whereas the district defense does not. Units from divisions may also fight in the security zone as part of the security echelon. Figure 6-6 shows examples of division deployment within an expeditionary army defense. This section focuses on the fundamentals of how divisions defend within the **security zone and main defense belt (line)**. The organization and conduct of defense depend on whether the division adopts it out of direct contact with the enemy or in contact.

MISSIONS

The primary mission of a division defending in the main defense belt is to **prevent penetration of the main defense** by repelling enemy assaults. Secondary missions include some or all of the following:

- Hold vital lines or areas.
- Support the development of an attack by an expeditionary army.

Restore the combat capabilities of the division when it has taken such heavy losses that it cannot continue to attack.

LINEARITY

Divisions defending within an expeditionary army defense tend to conduct a more linear defense, due to the relative concentration of forces at the time the division transitions to the defense from the offense. A division defending as part of an expeditionary army is more likely to conduct a coherent, contiguous defense than a division defending as part of a district. Linearity depends on the circumstances under which a division adopts the defense. If the divisions are in a dispersed, linear formation before the transition to defense, they would continue to be linear in the defense.

DEFENSE ASSUMED OUT OF DIRECT CONTACT

When required to defend, the OPFOR **prefers** to establish a defense when out of direct contact with the enemy. This method of transitioning to the defense offers the OPFOR commander more security and allows him to make better use of the terrain when planning his defense. The primary difference between this and transitioning to the defense in direct contact with the enemy is the existence of a **security zone** when out of direct contact. Given time and resources, a defense in direct contact with the enemy can develop into one out of contact with the enemy. This occurs as defensive positions become better prepared in depth and fewer forces remain in contact with the enemy.
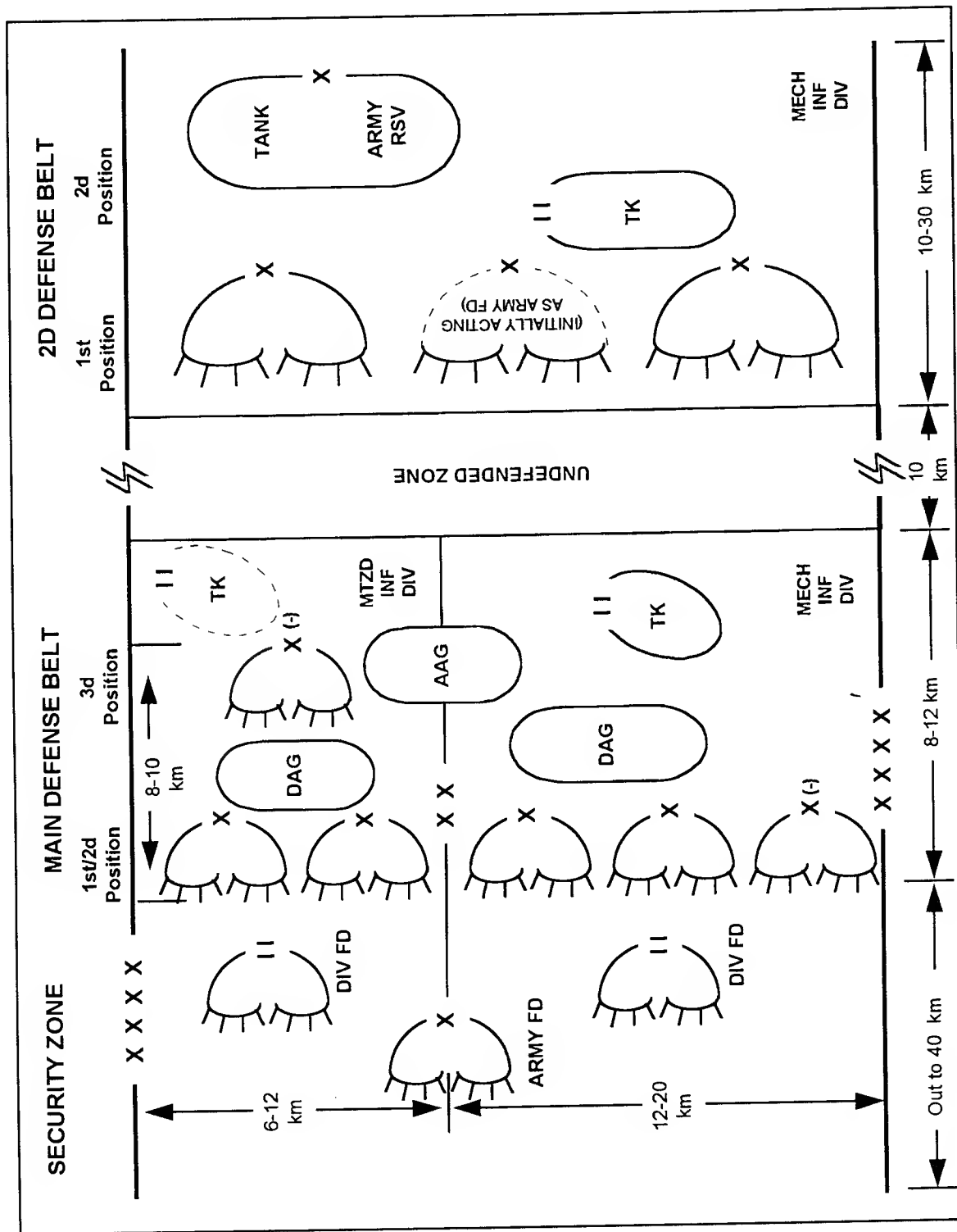
Figure 6-6. Expeditionary army defense (example).

When a division receives orders to assume the defense, the commander makes his decision based on a map reconnaissance. If time allows, he clarifies his mission with a personal reconnaissance on the ground. He determines the following factors:

- Key terrain.
- Enemy avenues of approach and probable main attack axis.
- Areas for possible nuclear, chemical and high-precision weapon strikes.
- Organization for combat.
- Maneuver requirements.
- Organization of strongpoints.
- Probable counterattack axes.
- Location of command posts and command observation posts.

OPFOR commanders make maximum use of the terrain. They avoid establishing stereo-typed patterns that would make enemy templating and targeting easier. The following paragraphs address the components of the division defense within the security zone and the main defense belt (line).

Security Zone

When transitioning to defense out of direct contact, an army normally establishes a security zone **in front of the main defense belt (line)**. It would not have the same depth as the security zone established in the defense of a region. Depth depends on the relative positioning of OPFOR and enemy forces at the time of adopting the defense. Although the creation of a security zone is an operational decision made by the army commander, division commanders control the forces contained within their respective areas of responsibility within that zone. If the army does not establish a security zone, the division may establish one and perform reconnaissance and security echelon missions with organic resources.

The purpose of the security zone is to delay, weaken, and deceive the enemy. The frontage of the division's security zone would match the frontage for the division's portion of the main defense belt (line). If a division commander establishes the security zone, its depth can range out to about 15 km, but varies based on the enemy and the terrain. If the division is part of an army, the army commander would typically establish a deeper security zone, extending out to as far as 40 km. Specific activities within the zone fall into two general mission categories: **reconnaissance** and **security**. In this case, missions and responsibilities would mirror those for the districts, as described in Section II above, but on a somewhat smaller scale.

Reconnaissance

Division ground reconnaissance assets come from the organic reconnaissance and EC battalion.[3] As with all ground reconnaissance, their primary mission within the security zone is to **warn of enemy movements**. This includes reporting on the size and location of units, troop concentrations, C^2 elements, locations of logistics and reserve elements, and probable main thrusts. The long-range reconnaissance company tends to move in single vehicles or small elements, establishing observation posts on dominant terrain. The reconnaissance companies move in small patrols of three to four vehicles each along the enemy's expected avenues of approach.

The depth of reconnaissance missions corresponds to the division commander's area of interest, which can extend far beyond the depth of the security zone. Elements from the

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[3] The primary missions of this battalion's EC assets do not normally place them in the security zone.

long-range reconnaissance company, inserted by parachute, helicopter, or on foot, can range out to 100 km ahead of the forward edge of the division's main defenses. Patrols from the other reconnaissance companies generally cover the forward portion of the security zone. However, they can reconnoiter well beyond that, out to as far as 40 to 50 km from the forward edge, if conditions permit or demand it.

If the division's parent army has established the security zone, it may extend out as far as 40 km from the division's forward edge. In this case, the army has its own reconnaissance and EC battalion. These army-level assets generally conduct reconnaissance at the extreme edge of the security zone and forward of the zone. Based on army-level reports, division and brigade reconnaissance would adjust or refocus their efforts, as necessary.

Security

All forces conducting security missions within the zone are part of the **security echelon**. The depth to which security echelon forces deploy depends on the depth of the security zone, the terrain, and the organization and type of force. Compared to the district, shallower security zones are more common with the expeditionary army, given the relative positioning of the enemy and the army at the time the latter adopted the defense. Security echelon forces established by the army commander cannot withdraw to subsequent positions or from the security zone without his consent. This degree of control is necessary because the army commander may be controlling multiple units in the zone, and he must consider the effect that moving one unit might have on the other units. For example, artillery may locate forward in the zone to support several units, and the movement of one unit may expose and endanger the artillery forces. Forward detachments and combat security outposts are the two primary types of security echelon forces.

The division commander normally designates a reinforced battalion taken from the second-echelon brigade as a **forward detachment** to fight in the portion of the security zone for which he is responsible. The size of the FD can vary, depending on the forces he has available to conduct his defense. Ideally, the basis of the FD is a motorized or mechanized infantry battalion. These have the needed mobility and organic combat support and combat service support. The division commander could take these forces from a first-echelon brigade defending along a less threatened approach or series of approaches. However, the division second echelon is the primary source.

From its **initial position**, the FD conducts a series of delays, maneuvering to **subsequent positions** when endangered by decisive engagement or encirclement. Its final position forward of the main defenses is called the **forward position**. These delays allow for the district's first-echelon brigades to deploy into and prepare positions in the main defense line.

First-echelon brigades provide local tactical security. In the absence of a security zone, or at the direction of the division commander, brigades may man **forward positions** with a company from the brigade's second-echelon battalion. The division commander may direct this action to facilitate withdrawal of the FD from the security zone. There is no difference between these forward positions and those previously addressed. In either case, they are up to 5 km in front of first-echelon positions in the main defense line.

First-echelon battalions may also establish platoon-sized **combat security outposts** up to 3 km forward of their positions. These outposts have the same missions as forward positions. It is normal to establish them in the absence of occupied forward positions or on secondary avenues of approach when forward positions are manned. The brigade commander directs their establishment, but the battalion commander usually chooses the specific location.

Division in Main Defense Belt (Line)

The main defense belt (line) relies on **defense in depth**. The basic element is the **prepared battalion defense area**. When possible, the OPFOR links areas together until they form a brigade defense sector or division defense zone.

Mission

The primary mission of the main defense belt (line) is to prevent penetration of the army's first echelon by enemy forces. This includes holding vital terrain, and supporting counterattacks by army or district second echelon and reserves.

Scope

The dimensions of the **division defense zone** depend on the base organization of the force, echelonment within the division, and the qualities of the terrain. A division composed of three motorized infantry brigades defends a zone from 6 to 12 km wide and 8 to 10 km deep. A division composed of mechanized or tank brigades defends a sector from 15 to 20 km wide and 8 to 12 km deep.

Organization of Defense

The main defense line constitutes the **region's first echelon**. Likewise, the main defense belt constitutes **the army's first echelon**; it contains approximately two-thirds of the army's combat power. Figure 6-6 illustrates possible deployment of a motorized infantry division within an army main defense belt. Exact dimensions of the army defense depend on the mix of motorized and mechanized divisions, as well as the echelonment within each of the divisions.

Each of the **divisions** within the main defense belt (line) defends with its **brigades in one or two echelons**, and with various reserves. Two-echelon deployment is usual on the most threatened axis or in restrictive terrain. Single-echelon deployment is more appropriate on secondary axes or when defending on a broader frontage. The division could also adopt single-echelon formation when it has suffered heavy casualties. Normally, the tactical formation must be deep enough to allow for flexible maneuver, especially of second-echelon and reserve forces, and to reinforce the resistance against the main thrust of the enemy's attack.

Terrain also affects division defensive formations. In mountainous regions, nonlinear area defenses are more prevalent, because the predictable enemy avenues of approach within this terrain allow for the creation of strongpoints at key points along those avenues. In restrictive or compartmented terrain, frontages expand. In normal terrain containing a key enemy axis, sectors are narrower.

The brigades have their organic or allocated combat support and combat service support. Within the division, the basis for the defense in both echelons is a series of **company-sized strongpoints** unified into **battalion defense areas**. Strongpoints provide 360-degree

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defense and deliberately have preregistered gaps between them. Figure 6-7 illustrates an example of possible deployment of a motorized infantry division within the main defense belt (line).

First echelon. Two or three brigades compose the division's first echelon. Their mission includes **preventing penetration** of the first echelon by repelling enemy attacks. Failing that, they hold vital terrain and support counterattacks by second echelon and reserve forces.

Second echelon. The primary mission of the division's second echelon is to **contain enemy penetrations** of the first echelon until conditions permit the launching of a counterattack. A secondary mission may be to reinforce the efforts of the first echelon should the enemy's main attack sufficiently weaken the positions of first-echelon defenders. Reinforcing the first echelon is the least preferred method of employment, because it causes forces to abandon prepared positions.

The second echelon, normally about one-third of the division's available strength, is **usually a motorized or mechanized brigade,** depending on division type. It deploys in a single echelon, either centrally behind the first echelon or behind the sector of the first-echelon brigade expected to face the enemy's main attack.

Maneuver reserve. Even if it creates a second echelon, the division may form a **maneuver reserve.** This reserve would make up roughly one-ninth of the division's total maneuver strength. This is a **contingency** force. It positions behind the second echelon (or a single echelon), on or near the most important or most threatened direction. Some standing divisions have a tank battalion which they may use as the division reserve.

Antitank reserve. A division would also hold its ATGM battery as an AT reserve to block penetrations of the first echelon and support the counterattack with fire. Some motorized and mechanized infantry divisions may have an entire AT battalion for this purpose. It is normal to employ this reserve along with an engineer mobile obstacle detachment.

Antilanding reserves. Armies may direct divisions to form **antilanding reserves,** ranging in size from platoon to battalion. The number created depends on--
- The assets available.
- The territorial location of the defense.
- The number of probable landing zones within the defensive zone.
- The location of these landing zones in relationship to key OPFOR facilities and terrain.
- The importance placed on protection of these zones against landings.

These reserves locate **near probable enemy airborne or air assault landing zones,** primarily in the division or army rear area.

Conduct

Divisions and their subordinate brigades, battalions, and companies conduct the battle in the main defense belt (line). The key to the defense is the establishment of **battalion-sized defense areas.** For mechanized battalions, these are 3 to 5 km wide. For other battalions, dimensions are less predictable, but a typical frontage for a motorized battalion can be up to 3 km. Battalions locate these defense areas on key terrain along avenues of approach. To completely prepare the area, they dig in with minefields, obstacles, and barriers. The plan is to cover all company strongpoints by fire. When linked together, these strongpoints form the battalion defense area.

NOTES:

1. Main defensive area is organized into two echelons and possibly a reserve:

   - First echelon inflicts enemy losses, forcing him to concentrate and canalize him into kill zones.

   - Second echelon mission is to destroy enemy or reinforce/replace first echelon.

2. In a motorized infantry division, a tank battalion (if present) acts as the main counterattack force.

3. Units in the security zone come from division second-echelon forces.

4. Detailed and coordinated fire plan is developed for fire support.

LEGEND:

(hatched rectangle)	PRELANNED ARTILLERY CONCENTRATION
(K in box)	KILL ZONE
(0000 box)	MIXED MINEFIELD (ANTIPERSONNEL AND ANTITANK)
(zigzag)	BARRIER
(dashed arrows)	PROBABLE ENEMY AVENUE OF APPROACH

Figure 6-7. Motorized infantry division in defense (example).

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Division Combat Support

The following paragraphs give a brief overview of how assets controlled by the division support the defense. Since many of the organizations and missions are common at both the district and division levels, the following paragraphs highlight only the differences. Later chapters contain more detailed, comprehensive information on the organization, principles of employment, and missions of these assets.

Reconnaissance and EC

Capabilities, missions, and priorities mirror those for the reconnaissance and EC battalions at district level. Its EC units normally position forward within the main defense belt (line). Ground reconnaissance units focus on the most probable axes of the enemy main effort within their sector, as refined based on reports from army reconnaissance assets. However, the focus of ground reconnaissance is in the security zone or beyond, rather that within the main defense belt (line). (For more information on reconnaissance and EC, see Chapter 4 and Chapter 13, respectively.)

Fire Support

As with the district, the aim of defensive OPFOR fire support at division level is to
- Disrupt enemy preparations for the attack.
- Cause maximum attrition to attacking forces before they reach direct fire range.
- Repel attacking forces that reach or penetrate OPFOR defenses.

This requires a fire plan based on AT fires. It integrates ATGM, AT gun, tank, helicopter, IFVs, and indirect and direct artillery fires on accessible terrain in front of and between the first-echelon strongpoints and into kill zones throughout the defensive zone.

Artillery. Artillery regiments organic to a division normally include one howitzer battalion, one or two gun-howitzer battalions, and a multiple rocket launcher battalion. **Allocation** methodology is the same as for the district. For divisions, the groupings formed are **division artillery groups (DAGs)**. If formed, these artillery groups use the artillery regiment described above as a base. Each DAG usually consists of at least two battalions of field guns, howitzers, gun-howitzers, or multiple rocket launchers.

The **number** of **DAGs** formed depends on the availability of artillery assets and the frontage over which the division must defend. These artillery groups position within the main defense belt (line) behind the first-echelon brigades. They deploy along the primary avenues of approach. If the groups cannot cover more than one brigade sector due to the width of the frontage, they split into two smaller groups. If employed in a single group under these same circumstances, it is in the brigade sector expected to face the enemy's main attack. A brigade receiving additional artillery from division level may have its own **brigade artillery group (BrAG)**.

The missions for the DAG are the same as for the MDAG in the military district. Chapter 7, Artillery Support, discusses the defensive phases of fire employed, and subordinate priorities.

Antitank. All infantry divisions typically have an organic ATGM battery to serve as an AT reserve. Motorized and mechanized divisions may in some cases have a "standard" AT battalion like the one sometimes found in a district. Missions are the same as for the district. (See Chapter 8, Antitank Support.)

Air Force. Organizations, missions, priorities, and liaison functions are the same as for the district. (See Chapter 9, Air Support.)

Air defense. A motorized or light infantry division has an air defense regiment composed of four batteries of towed AA guns. A mechanized division has the same type of air defense regiment found at district level, with a total of five batteries in its SAM and towed AA gun battalions. Missions, and priorities are the same as for the district. Weapons position to the rear of defending first-echelon maneuver brigades to engage aircraft that penetrate the air defenses of those units. (See Chapter 10, Air Defense Support.)

Engineer. Divisions have organic engineer capabilities ranging from a company (in motorized and light infantry divisions) to a battalion (in a mechanized infantry division). Depending on the enemy's anticipated main effort and the availability or organic engineer resources at the army or region level, they could receive more support. Missions and priorities are the same as for the district. (See Chapter 11, Engineer Support.)

DEFENSE ASSUMED IN DIRECT CONTACT

They OPFOR realizes there are times when it cannot avoid assuming the defense in direct contact with the enemy. The same factors of mission, enemy, troops available, terrain, and time available considered in a defense out of contact are the primary considerations in establishing a defense in contact. The main differences when in direct contact are the following:

- There is no security zone, or a very small one.

- The terrain may be unfavorable for the defense; favoring the attacker.
- The mission to defend in contact can last only until the OPFOR is able to resume the offense or develop the defense into one out of contact with the enemy.
- The enemy situation is likely to be clearer; an enemy attack may be imminent.
- Time for preparation can be short.

Security Zone

When the force going over to the defense is in contact with the enemy, establishing positions within a security zone is difficult. If there is a security zone, its depth is not nearly as great as it is when the force is out of contact. Long-range fires do not play the part they do when out of contact, because the enemy is, for the most part, within direct fire range. Achieving deception is difficult, since friendly forces may be under direct observation of the enemy. The OPFOR may emplace obstacles, but not as extensively as in a defense out of contact with the enemy.

Combat and Combat Service Support

For support elements, differences in mission arise from the temporary nature of a defense established in contact with the enemy. Combat support **remains configured for continued offensive action**. Artillery groupings may retain an organization designed to support the next offensive phase. This is particularly true if the OPFOR intends to go back on the offense as quickly as possible.

Engineer mobile obstacle detachments lay minefields across critical avenues of approach. They employ armored minelayers, armored engineer vehicles, and earthmoving equipment to prepare obstacles and firing positions. The sequence of engineer work ensures readiness to repel an enemy attack.

Combat service support also remains configured to support offensive action. Its primary effort is to prepare units for future offensive actions. The priority of support goes to units selected to initiate offensive actions.

Division

The defense in direct contact generally occurs as a result of a stalled offense. The frontage that the division occupies is initially equal to that division's zone of attack. The most obvious difference in the division combat formation is the absence or shallowness of a security zone. The top priority for elements in contact is the quick assumption of favorable defensive positions. This often requires local attacks to seize these positions. As the situation permits, the division gradually develops the defensive frontage and depth discussed above (for a defense assumed out of direct contact). Those divisional units not in contact immediately begin constructing second-echelon positions.

Brigade

Divisional brigades are also likely to assume a defense in direct contact following unsuccessful offensive action. They commonly use local attacks to seize the best defensive ground and regroup into a defensive sector from the former narrow zone of advance. Brigades do not form combat security outposts in this type of defense.

Section IV. Battalion and Below

Maneuver battalions defend in basically the same way, whether they are part of a separate or divisional brigade. A battalion's role in the defense depends on its place in the brigade's combat formation. It may be in the first or second echelon of the brigade or serve as an FD or maneuver reserve for the division or district. Under certain circumstances, a battalion can also defend in isolation.

Company strongpoints form the basis of the battalion defense area. The primary focus of the fire plan and overall site selection is to negate the superior enemy air and armor capabilities. The OPFOR tailors its defense to the specific factors of mission, enemy, terrain, troops, and time available. These factors determine--
- Site selection.
- Use of obstacles.
- Percentage of force allocated for counterreconnaissance.
- Level of deception.
- Organization and employment of reserves and counterattack forces.

There is no "doctrinal" frontage or depth that the OPFOR will defend. However, Figure 6-3 earlier in this chapter outlines some typical frontages and depths.

DEFENSE ASSUMED OUT OF DIRECT CONTACT

Units may transition to the defense out of direct contact with the enemy, on the order of a senior commander. This may occur--
- In border areas, to repel a possible enemy attack.

- Where an OPFOR attack is inadvisable or impossible (on secondary axes or axes with difficult access).

Follow-on forces may shift to the defense in the absence of contact.

Battalion Area Defense

The battalion commander moves his companies to designated strongpoints. There he organizes engineer preparation and other work to create a **battalion defense area**. A unified system of fire, obstacles, and communication trenches interconnects company strongpoints and positions for supporting weapons.

In the defense, a battalion combat formation may have **one or two echelons**. (See Figure 6-8.) Thus, it consists of first-echelon companies, a second echelon or reserve, and possibly some weapons and reinforcing assets remaining under the direct control of the battalion commander.

First-Echelon Companies

In a two-echelon formation, the first echelon comprises two companies. In a single-echelon formation, it includes all three companies. Even in the latter case, one company may deploy forward or backward, forming a kill zone. On open terrain, one company may adopt an echelon-left or -right. In all cases, company strongpoints deploy where they can intercept probable axes of enemy advance.
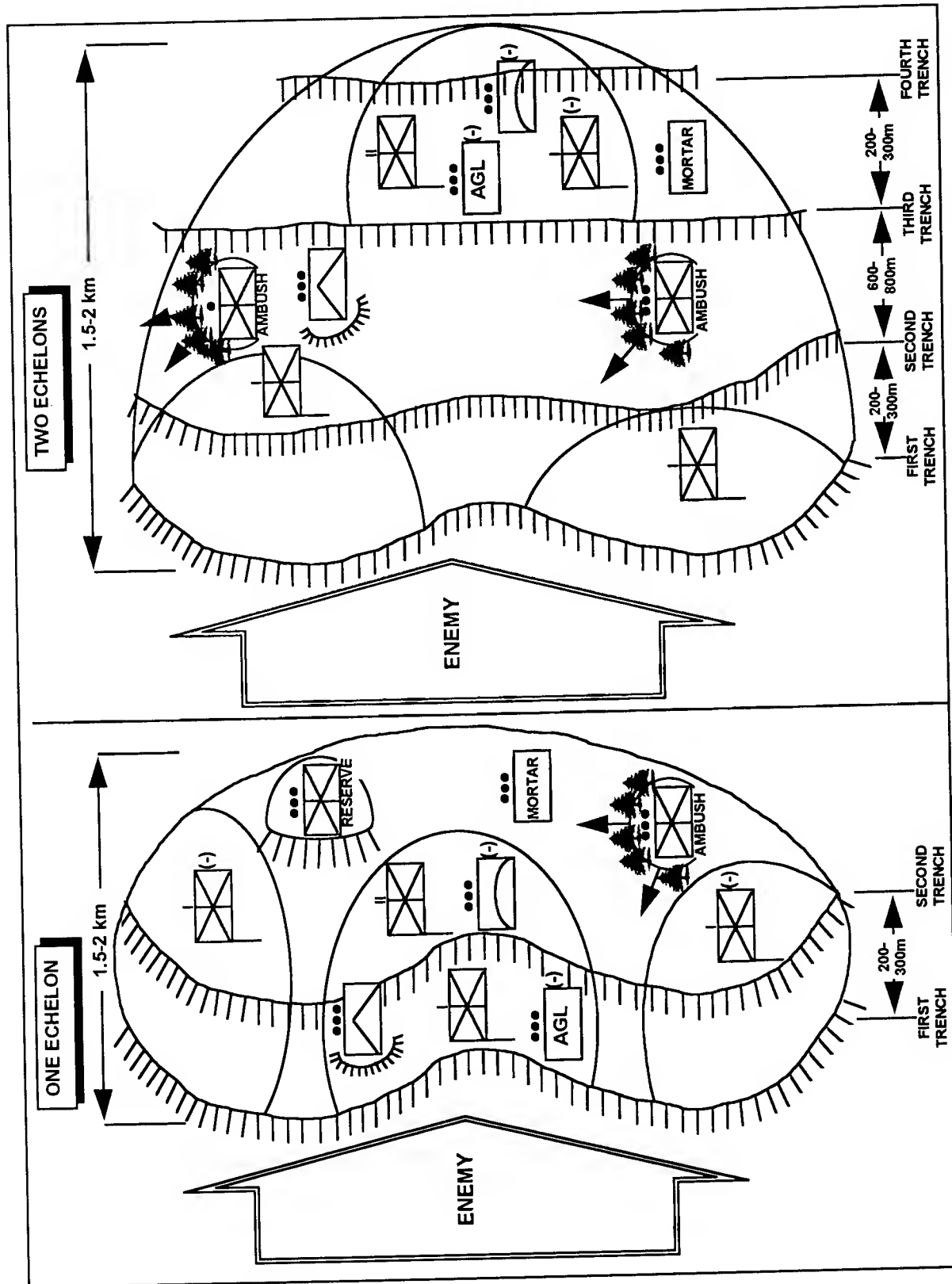
Figure 6-8. Motorized infantry battalion in defense (example).

The mission of the battalion's first echelon is to destroy the enemy ahead of the forward edge and when he penetrates into its depth. It should hold important terrain sectors and prevent penetration into the battalion defense area. If the enemy has gone around its strongpoint, a company shifts to a perimeter defense and continues to hold its position (usually on important terrain). If the battalion's second echelon or reserve conducts a counterattack, first-echelon companies support it with fire. On the order of the battalion commander, a first-echelon company may participate in the counterattack with a portion of its forces.

Second-Echelon Company

In a two-echelon formation, one company defends a strongpoint in the depth of the battalion defense area. A company in the battalion's second echelon has the mission of halting the attacking enemy; under favorable conditions, it may also counterattack to destroy an enemy force that has penetrated first-echelon strongpoints.

Reserve

When a battalion deploys all three companies in a single-echelon combat formation, it forms a reserve made up of at least a platoon. Such an alignment may exist when--

- There is a shortage of forces and assets.
- Terrain is difficult for the enemy to access.
- The battalion is defending in the brigade's second echelon or on a secondary axis.
- The battalion is fighting in the security zone.

The battalion reserve occupies and prepares a strongpoint in the depth of the battalion defense area. Its primary task, in coordination

with first-echelon companies, is to inflict maximum losses on enemy forces penetrating into the depth. This may include a counterattack. In the course of battle, the reserve may reinforce attrited first-echelon companies that have lost their combat effectiveness. It must also be ready to perform other contingency missions.

Fire Ambush

Depending on the situation, a battalion may designate a platoon as a fire ambush. (A company may designate a squad for this role.) The assigned platoon normally comes from the battalion second echelon. Its mission is to inflict maximum damage on an enemy force that has penetrated or is trying to bypass the battalion defense area (company strongpoint). It engages the enemy by surprise, close-range, direct fire of all available weapons. If reinforced with engineers, it can also use minefields to create a kill zone or prevent the enemy from withdrawing after receiving sudden fire damage. Concealed fire ambush positions may be on likely avenues of approach within the battalion defense area (company strongpoint), in gaps between them, or on flanks. The most likely positions are on reverse slopes, terrain folds, outskirts of urban areas, tree lines, and bushes. Flank squads of a platoon may deploy somewhat ahead to create a kill zone for cross fires.

Battalion Commander's Assets

The mortar platoon and AT platoon usually remain subordinate to the battalion commander. As a rule, he employs them at full strength, rather than dividing them among his subordinate companies. He normally deploys the AT platoon on the most likely armored approach, on an exposed flank, or in a position to support a counterattack. In restrictive terrain, he may attach mortar or AT elements to first-

echelon companies. The shoulder-fired SAM platoon normally remains directly subordinate to the battalion commander. However, its squads can deploy in company strongpoints, as well as near the battalion COP, to provide air defense for the entire battalion defense area. Sometimes the battalion commander may attach the entire automatic grenade launcher (AGL) platoon to an infantry company defending on the enemy's expected main axis. Alternatively, he may attach an individual AGL section to one or more first-echelon companies.

Battalion as Forward Detachment

A battalion can fight in the security zone, as an FD for its parent division or district. Its mission there is to--

- Mislead the enemy about the deployment of the first positions in the main defense belt (line).
- Delay the advance of enemy forces.
- Force the enemy to deploy prematurely or in an unfavorable direction.
- Inflict losses on the enemy.
- Gain time for preparation of the main defense belt (line).

A battalion defending in the security zone first deploys at the **initial position**, in one echelon. The three companies in that echelon defend an area up to 7 km wide. In effect, this area is 15 to 20 km deep, depending on the depth of the security zone. From their original strongpoints in the initial position, companies conduct preventive maneuver to a series of **subsequent positions**. Deployment in subsequent positions may be in one or two echelons. The distance to each subsequent position is up to 3 km; this allows companies to move by bounds and maintain suppressive fire on enemy forces.

The final defensive position in the security zone (called the **forward position**) should be 3 to 5 km in front of the forward edge of the main defenses. In this forward position, the FD's companies may defend in either one or two echelons, or a mixture of both. As much as possible, the forward position must resemble a battalion defense area in the first echelon of the main defense belt (line). Compared to the initial and subsequent positions, the forward position is more likely to have engineer preparation, with company strongpoints closely interlocked by complex obstacles.

OPFOR commanders expect the FD to lose combat power during the battle in the security zone. Upon maneuvering to the forward position, an attrited FD may not be capable of defeating the enemy in front of the forward position. In that case, it either withdraws from sector or deploys to strongpoints in the forward position that are unlikely to receive the enemy main effort. (Companies from first-echelon brigades man strongpoints in forward positions on sectors expecting the main attack.)

Battalion in Isolation

As mentioned above, a battalion normally defends as part of a larger formation. However, there may be cases where a battalion, by design or by accident, may have to defend in isolation. Intentional defense in isolation occurs when the OPFOR is not in direct contact with the enemy.[4] It would normally be for the purpose of holding key terrain, either ahead of or behind the forward edge of the main defenses. Examples of such key terrain could be a road junction along an enemy axis of advance or a chokepoint in restricted terrain. Figure 6-9 shows an example of a battal-

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[4] Unintentional isolation most often occurs in the form of becoming encircled by enemy forces. See "Reaction to Encirclement" under "Defense Assumed in Direct Contact" below.

ion defending under such circumstances on a specific piece of restricted terrain.

A battalion (or company) with a stay-behind mission or on an isolated axis might not have a higher organization's security zone or covering zone in front of it. On an independent mission or in restricted terrain, it might have no adjacent battalions (or companies) on its flanks or to its rear. If defending key terrain in the depth of the OPFOR defenses, it might have no other units defending behind it.
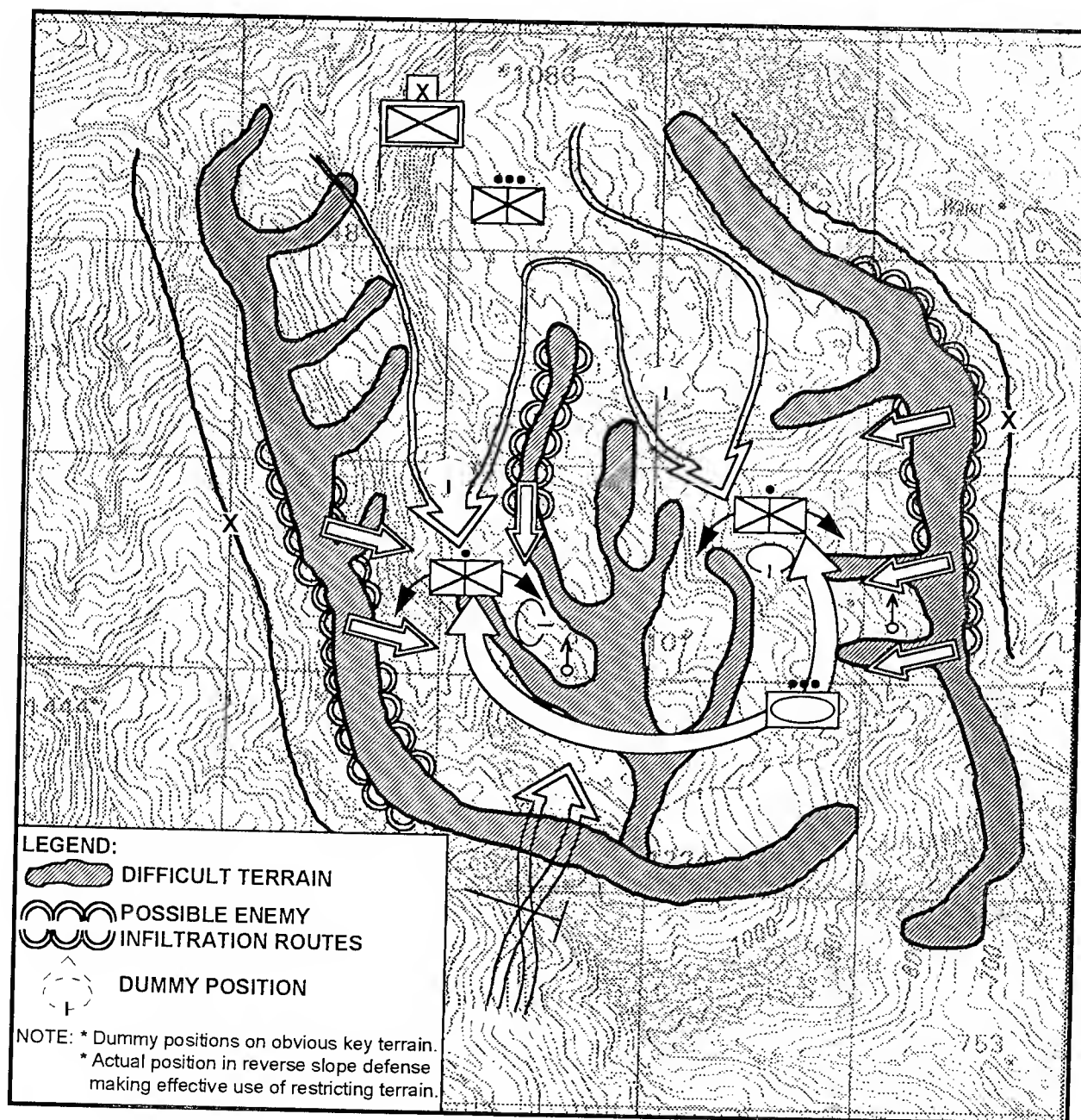
Figure 6-9. Reinforced motorized infantry battalion defense in restrictive terrain (example).

Battalions do not have a deep strike capability. After an OPFOR withdrawal, however, higher commanders may employ platoon- or company-sized stay-behind units to disrupt the enemy's preparation and attack. Fixed- and rotary-wing aviation assets, if available, could aid in this mission.

Covering Zone

A battalion in isolation may have to create a makeshift covering zone of its own. The purpose of this zone is to delay, weaken, and deceive the enemy. It must extend out far enough to identify the enemy's main effort. Ideally, it would contain both reconnaissance and security forces. The battalion commander may have up to a third of his force dedicated to these missions.

Reconnaissance. Even in the absence of a normal security or covering zone, the parent brigade may have a reconnaissance platoon, or a squad from that platoon, near the battalion's position. Patrols from this reconnaissance unit may deploy in front of or around the battalion defense area. Baring that, the battalion commander may have to use an infantry platoon or even an entire company in a reconnaissance role. The reconnaissance force can take the form of either mounted or dismounted patrols. Its mission is to conduct reconnaissance by observation in order to--

- Clarify the situation.
- Determine the makeup of enemy forces along mounted avenues of approach.
- Identify any dismounted infiltration into the area.

Depending on the terrain, it may cover an area up to 2 km in front of the forward edge of the battalion's main defense area when the battalion does not deploy a combat security outpost (CSOP). If there is a CSOP, the area of reconnaissance coverage would be forward of the outpost.

Reconnaissance forces can also attack an enemy from the flank or rear as he passes through the covering zone. They may also deploy snipers throughout the zone to kill enemy soldiers as they approach.

Security. Behind the reconnaissance force, the battalion may employ one or more platoon-sized CSOPs to prevent enemy reconnaissance from targeting company strongpoints. In this case, the position of a CSOP would probably be no more than 2 km in front of the forward edge. The security elements normally receive support from the battalion's mortars, any other indirect fire assets available, and direct fires from the forward edge. Once the enemy begins to deploy for a major attack, the security elements may withdraw or continue to fight and attrit the enemy from his rear and flanks.

Company Strongpoints

The foundation of the main battalion defense area rests with the preparedness and site selection of the company strongpoints. These usually do not defend obvious key terrain, because of the easy acquisition and targeting by enemy systems. In some cases, a company could also establish a strongpoint outside the context of a battalion defense, to defend critical terrain.[5] In either case, companies defend through a series of platoon strongpoints integrated into a company strongpoint defense. The intent is to create a defensive position that has no apparent gaps between units. This forces the enemy to conduct multiple, and costly, forced breaches while receiving coordinated direct and indirect fires.

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[5] The OPFOR defines critical terrain as defendable, restrictive, and capable of severely complicating the enemy's ability to conduct a coordinated attack.

Company strongpoints can also contain tanks, IFVs/APCs, artillery, air defense, and AT units attached to the battalion, or which ended up in isolation with it. The battalion commander can attach these assets to companies and dispose them in their strongpoints. When available, engineers establish minefields and other obstacles to hamper on canalize enemy maneuver.

Local counterreconnaissance around the company strongpoint increases the complications the enemy encounters as he attempts to conduct a breach. If a parent battalion does not deploy a platoon for this role, the company may have to use a squad from one of its own platoons for local reconnaissance.

Maneuver Reserve

The OPFOR plans for reserves at all levels. Even a small reserve force, committed at the correct time and place, can severely impact on the battle. A company commander retains a reserve up to a squad in strength, and a battalion commander assigns up to a platoon and sometimes more as his reserve.[6] Battalion or company commanders often position reserves in the center of the battalion defense area or company strongpoint. From that central location, the reserve can maneuver quickly to any threatened axis. However, a battalion commander can also position his reserve to the rear of company strongpoints in a covered and concealed position awaiting orders.

The commander employs his reserve forces as a unit. One of its primary roles is to counterattack enemy forces that have penetrated the defense or are attempting to envelop a strongpoint or defense area.

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[6] In mechanized infantry or tank units, a battalion or company commander may form an **armored group** to act in this reserve role. In a battalion commander finds tanks, IFVs, or APCs isolated along with his battalion, he can also use them as an armored group. Armored vehicles, if available, make the best reserve, due to their mobility, survivability, and firepower.

Company Strongpoint

Most companies defend in strongpoints that comprise the battalion defense area. A company strongpoint is a terrain sector with engineer preparation, adapted for perimeter defense.

Normally, all three platoons of a company defend in one echelon. Depending on the terrain, platoons in a company strongpoint may be in a reverse wedge, echeloned (left or right), or other formation. They use the formation that provides the best system of fire to the front and flanks of the strongpoint. Under some conditions, the company may use a two-echelon formation, with two platoons in the first echelon and one in the second. This variety of possible combat formations precludes stereotyping. Figure 6-10 shows examples of one- and two-echelon formations. (See also Figure 6-4, which shows an example of a two-echelon company strongpoint in further detail. That diagram includes primary and alternate positions for platoon strongpoints, an ambush position, the system of fire, trenches, and obstacles.)

First-Echelon Platoons

Platoons in the company's first echelon use fires of all available weapons to inflict maximum damage on the enemy ahead of the forward edge. They tenaciously hold important terrain sectors (objectives) on the forward edge. A platoon does this independently or in coordination with adjacent platoons and weapons in the company strongpoint. If the enemy penetrates into the platoon strongpoint, the platoon tries to destroy him by point-blank fire, grenades, and hand-to-hand fighting. If the enemy bypasses or envelops the platoon strongpoint, the platoon shifts to a perimeter defense. It continues to hold occupied positions, destroys the enemy with fire from primary and alternate positions, and fights under the direction of the company commander.
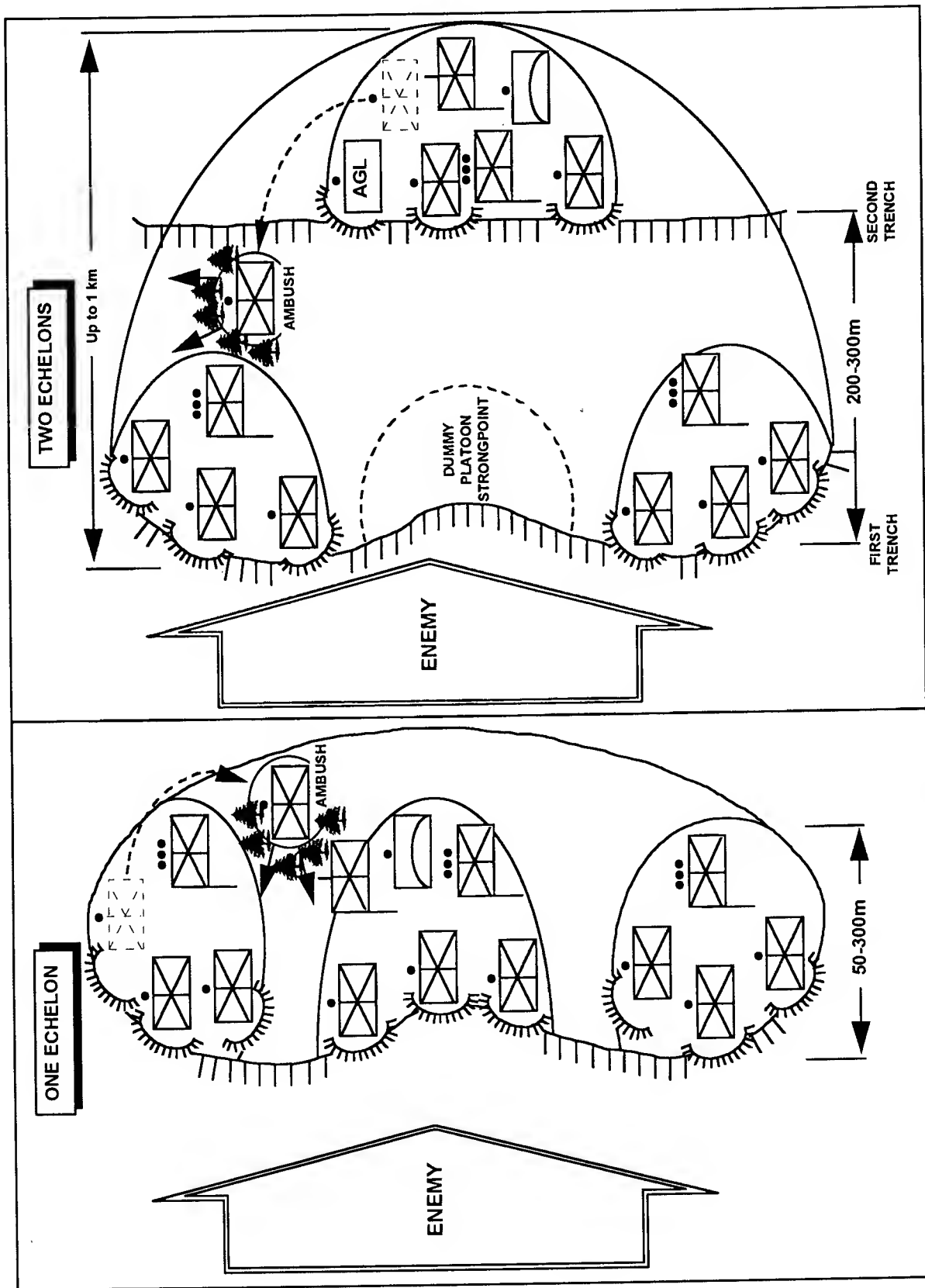
Figure 6-10. Motorized infantry company in area defense (example).

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Second-Echelon Platoon

If the company uses a second echelon, that platoon would establish a strongpoint in the depth of the company strongpoint (in the second trench). Its mission is to firmly hold that strongpoint and destroy an enemy who has penetrated the first echelon. It prevents the enemy from fanning out laterally and into the depth. Even if it does not succeed in destroying the enemy, it can slow his advance and create favorable conditions for the senior commander to counterattack. Sometimes, on order of the company commander, all or part of the platoon maneuvers to occupy positions reinforcing the first-echelon defense on the most threatened axis.

Fire Ambush

A company may designate a squad as a fire ambush. The assigned squad would come from the company second echelon, if there is one. Its mission is to inflict maximum damage on an enemy force that has penetrated or is trying to bypass the company strongpoint. It engages the enemy by surprise, point-blank fire of all available weapons. (See discussion of fire ambush above, under Battalion Defense Area.)

Firing Positions

A firing position is a place, with or without engineer preparation, occupied or intended for occupation by an infantry squad or other weapons. It should provide good all-around field of view and a field of fire that allows firing to maximum range in given directions. A system of firing positions should allow mutual fire support, concentrated fire, and conduct of fire into gaps, from behind flanks, and over the heads of friendly units. Such a system could involve different types of firing position, according to purpose: primary, alternate, temporary, and dummy.

Primary firing positions are for performing assigned missions in the course of battle. The commander can assign each position primary and secondary *zones of fire.* The zones of fire for small arms of the infantry squad and other weapons combine into a zone of continuous, multilayered fire of all kinds of weapons. These are the building blocks of platoon and company zones of fire. Within these zones, there are *fire concentration sectors* for engaging precisely detected enemy targets or anticipated targets. In the latter case, designated sectors are usually at road junctions, obstacle crossings, defiles, forest openings, and other terrain sectors constraining enemy actions or compacting his combat formation.

Alternate firing positions are for executing maneuver in the course of a defensive battle. They also come into use when it is impossible to perform the mission from the primary position. When possible, each weapon should have one or two alternate positions. This permits shifting to a perimeter defense. Shifting to alternate positions occurs only by order of the commander. With the shift of positions comes a shift in the zone of fire that permits fire concentrations in new sectors. Communication trenches allow concealed movement between primary and alternate positions.

Temporary firing positions are for performing individual missions and misleading the enemy regarding the actual alignment of the system of fire. Fire from these positions can destroy an enemy trying to perform reconnaissance, breach obstacles, or penetrate into the depth of the defense. After performing assigned missions, weapons occupy primary firing positions by direction of the company (or battalion) commander.

Dummy firing positions are for misleading the enemy regarding the actual position of weapons. A group of dummy positions can provide the signature for a dummy platoon strongpoint.

Trenches

A company strongpoint may have one or two fighting trenches, depending on echelonment. In a two-echelon strongpoint, the second trench is about 200 to 300 meters behind the first; this allows the second-echelon platoon to support the first echelon with cover fire. Communication trenches interconnect platoon strongpoints and positions of organic and attached support units within the company strongpoint. There are one or two communication trenches between the first and second trenches in a company strongpoint; two are ideal, with one for command and communications and one for ammunition supply and evacuation of wounded. When the battalion deploys in two echelons, there is usually one communication trench connecting each first-echelon company with the second-echelon company; the distance to the latter may be about 600 to 800 meters. If a second-echelon company deploys in two echelons, its strongpoint would include the third and fourth trenches of the battalion defense area. (See Figures 6-8 and 6-10.)

Company in Forward Position

Even if there is a security zone, a company from the brigade's second-echelon battalion may defend at a forward position. In this role, its purpose is to--

- Mislead the enemy regarding the trace of the forward edge and the deployment of the first-echelon positions on the main defense belt (line).

- Prevent an enemy surprise attack on first-echelon positions.
- Repel enemy reconnaissance in force.
- Force the enemy to deploy his main body prematurely.

The forward position is normally up to 5 km in front of the forward edge. If forced to withdraw from the forward position, the company maneuvers back to its primary defensive positions within the main defense belt (line).

Platoon

As a rule, the platoon defends as part of a company. (See the discussion of first- and second-echelon platoons above, under Company Strongpoint.) Under certain conditions, however, a platoon may perform independent missions; it may act as a battalion reserve, a combat security outpost, a fire ambush, or a combat reconnaissance patrol.

Creation of a platoon strongpoint begins with emplacement of wire and other obstacles ahead of the platoon forward edge. Platoon personnel dig one- and two-man foxholes, connect them into squad entrenchments, and then prepare a continuous trench to unify the platoon strongpoint. (See Figure 6-11.) Next, they improve these positions and emplace additional obstacles to the flanks (and rear) of the strongpoints and in gaps between adjacent strongpoints. Within 24 hours after occupation, they usually complete fighting positions with 18 inches of overhead cover. Over time, the continuous trench extends to link platoon and then company strongpoints in the battalion defense area.

During preparation of strongpoints, platoons and companies must provide their own local security. Each platoon typically sends out two or three soldiers for this purpose; a company can deploy a squad.
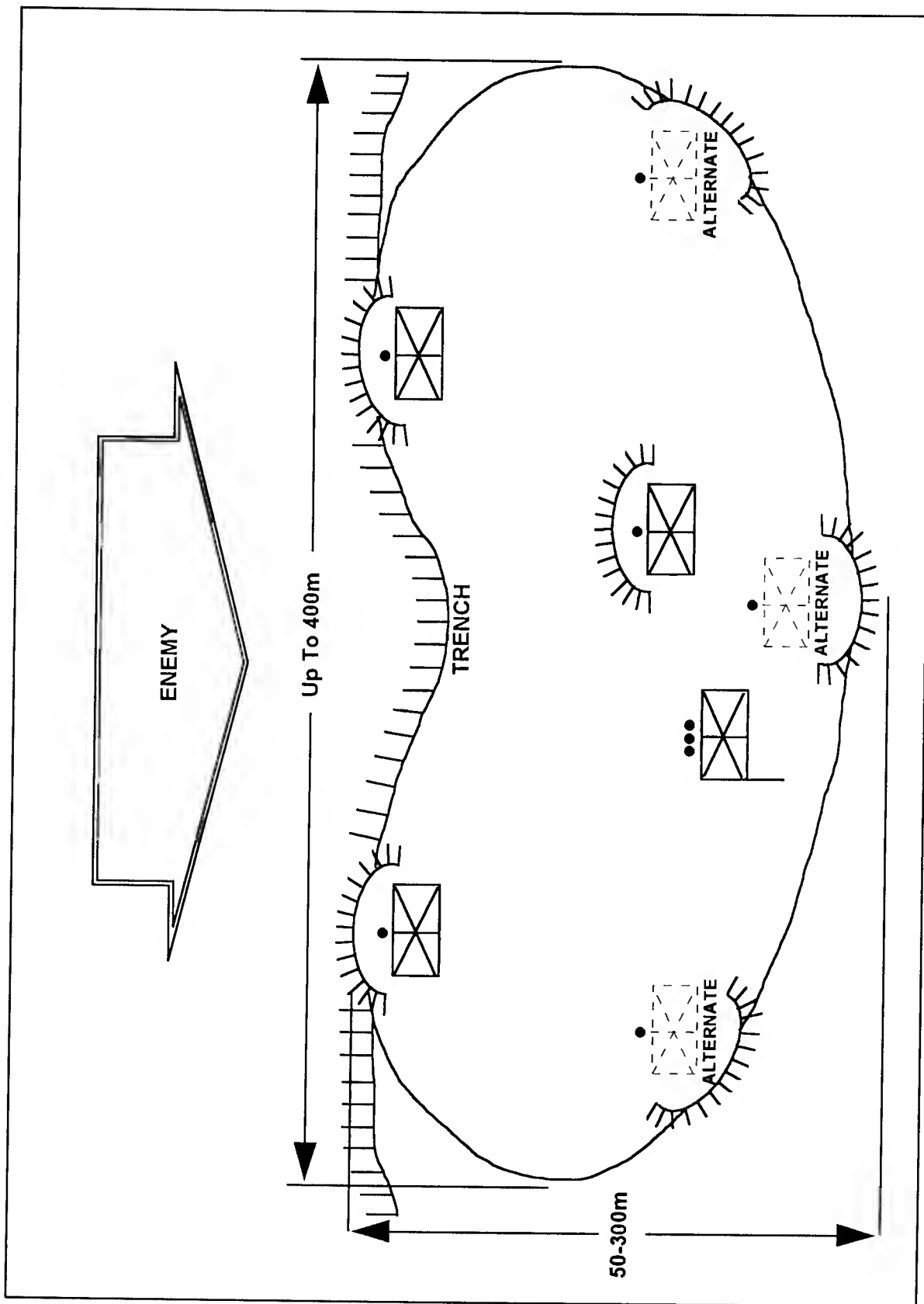
Figure 6-11. Motorized infantry platoon in defense (example).

DEFENSE ASSUMED IN DIRECT CONTACT

Transition to the defense in immediate contact with the enemy most often occurs in the course of an attack against a defending enemy. (This can happen when repelling counterattacks by superior enemy forces, consolidating captured lines, or securing flanks of attacking units.) It can also occur with an unsuccessful outcome of a meeting battle or pursuit. In the course of a defensive battle, an encircled unit may have to transition to a perimeter defense while still in direct contact with the enemy. Under each of these conditions, units must organize the defense quickly, under enemy fire. This is not always on favorable terrain and often without engineer preparation. The unit establishing the defense may have suffered losses of personnel and equipment in the course of the preceding battle.

Reverse-Slope Defense

Establishing the defense when in contact with the enemy poses problems, since forces may have to dig in while under enemy fire and observation. For this reason, terrain permitting, an OPFOR commander can use a reverse-slope defense. Part of the force remains in contact with the enemy, usually on the forward slope of the defensive terrain. The remainder of the force withdraws and prepares temporary defensive positions on the reverse slope. The OPFOR recognizes the following advantages of a reverse-slope defense:

- It hinders or prevents enemy observation of the defensive position.
- Attacking forces are not able to receive direct fire support from following forces.

- Enemy long-range AT fires are not effective.
- Attacking enemy forces silhouette themselves crossing the crest of the hill.
- Engineers can conduct their work out of direct fire and observation from the enemy.

One disadvantage of this type of defense is that all weapon systems cannot exploit their maximum range. When possible, the OPFOR would use both a forward- and a reverse-slope defense to take maximum advantage of the terrain. (See also the Defense section in Chapter 17.)

Battalion

When assuming the defense in direct contact, a battalion initially halts with subordinate units occupying the positions they occupied when they received the order to defend. This is often a linear formation. The first priority is to seize favorable terrain. Though the enemy is in close proximity, the battalion would set up local security, if the opportunity occurs. Unless the halt was a temporary holding action, the battalion commander gradually transitions his forces into defensive positions out of direct contact, if the mission and situation permit. Platoons may remain in positions to establish a combat security outpost in front of the new defense.

Company

Most companies defend in strongpoints that comprise the battalion defense area. In the absence of a security zone, a company from the brigade's second-echelon battalion may defend at a forward position.

Platoon

As a rule, the platoon defends as part of a company. Under certain conditions, however, a platoon may perform independent missions; it may act as a battalion reserve or as a fire ambush.

Reaction to Encirclement

As a rule, encirclement (or envelopment) results from an unsuccessful battle with a superior enemy force. It occurs most often in a defensive battle, when the enemy penetrates the defense of adjacent units and moves to the flank and rear of the unit. A battalion defending as an FD or a company defending in a forward position may also become encircled in the security zone. (Encirclement is also possible as a result of an unsuccessful meeting battle or when the enemy pursuit is faster than an OPFOR withdrawal.)

Combat in Encirclement

The combat formation and missions of a unit in an encirclement are similar to those in an ordinary defense; however, the following paragraphs highlight special features inherent in this situation. Preparation for combat in encirclement can be difficult when a unit has sustained losses. The battalion (company) being encircled must shift to a perimeter defense while still fighting an intense battle with the enemy trying to complete the encirclement.

Combat formation. The battalion (company) commander must consider not only the remnants of his own forces, but also other OPFOR units that have ended up in the same encirclement and now become subordinate to him. These units may include tank, air defense, artillery, AT, automatic grenade launcher, or logistics elements previously located in or near the battalion defense area (company strongpoint) or withdrawn to it. As a rule, the battalion commander would attach these assets to companies and deploy them in the company strongpoints. The only exception might be artillery and logistics.

A **single-echelon** formation best meets the requirements of a circular, perimeter defense. Thus, the battalion (company) formation normally consists of--

- First-echelon companies (platoons).
- A reserve (up to a platoon or sometimes more for the battalion; up to a squad for the company).
- Weapons and reinforcing units remaining directly subordinate to the battalion (company) commander.
- Armored groups and fire ambushes.

In perimeter defense, a battalion defense area could be approximately 6 to 8 km in circumference, with an average depth of 2 to 3 km. Each company strongpoint within this defense area would probably have the same dimensions as in an ordinary defense. A company strongpoint (defending in isolation) could be 1.5 to 2 km in circumference, with an average depth of 500 to 700 meters. These dimensions would allow dispersed deployment of the combat formation within the defense area (strongpoint). The circumference could be smaller if an attrited battalion (company) does not have all three of its original companies (platoons).

Companies (platoons) in the first echelon deploy where they can intercept the most likely axes of enemy attack, split the attacking force, and destroy it in detail. The battalion (company) reserve deploys in the center of the defense area (strongpoint), from where it can quickly maneuver to a threatened sector (axis). Artillery remaining directly subordinate to the battalion commander would occupy firing positions in the center of the battalion defense area, ready to repel enemy attack on any axis.

Besides the circular disposition of company (platoon) strongpoints, the organization of the defense also differs from the ordinary defense in the following aspects:

- Absence of a combat security outpost for the battalion.
- A larger number of alternate firing positions, to ensure fire in all directions.
- Less time to prepare trenches, communication trenches, and improved positions.
- Greater reliance on terrain features for protection and concealment.

Both battalion and company would make wide use of armored groups (if the encirclement includes armored vehicles) and fire ambushes.

The battalion (company) **system of fire** should ensure engagement of the enemy around the outside of the entire perimeter and in kill zones for possible penetrations within it. Companies, platoons, and direct fire weapons have assigned zones of fire; the zones of adjacent units and weapons should overlap. The use of roving weapons and fire ambushes can mislead the enemy regarding the true structure of the defense and the system of fire.

Mission and conduct. The mission of the battalion (company) in the encirclement is to--

- Firmly hold the occupied defense area (strongpoint).
- Prevent the enemy from splitting the defending units.
- Inflict maximum damage on the enemy.
- Create conditions for breaking out of the encirclement.

The encircled unit should also contribute to the success of the main body of its parent unit by pinning down as many enemy forces as possible.

The defenders must maneuver forces, weapons, and fires quickly and covertly to a threatened axis and be ready to destroy a penetrating enemy force by fires and counterattacks. If the enemy is unsuccessful in one sector, he can regroup for an attack in another sector. In this situation, OPFOR reconnaissance must discover the transfer of enemy efforts, and the defending battalion (company) commander must quickly maneuver his reserve (and perhaps also first-echelon units from other sectors) to the threatened axis.

Breakout from Encirclement

Breaking out of encirclement consists of breaking through the encircling enemy force in a selected sector (axis) for linkup with friendly forces. However, it also involves continuing to hold the battalion defense area (company strongpoint) for a certain time. Breaking out in small groups usually leads to heavy losses and destroys the organizational integrity. Therefore, the senior commander in the encirclement must order the breakout, determine the axis for it, and ensure coordination with other subordinate units still conducting the perimeter defense.

Combat formation. Therefore, the battalion (company) combat formation must include--

- Breakout units.
- Covering force units assigned to cover the breakout and secure flanks.
- A reserve to perform missions that arise suddenly.
- Reinforcing weapons and units remaining directly subordinate to the commander.

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Breakout units are normally the most combat-effective forces available. These normally comprise at least half of the maneuver units. Most available tanks, artillery, AT weapons, and mineclearing equipment would reinforce them. Reinforcements include not only organic battalion (company) assets, but also any other OPFOR units in the same encirclement.

The battalion usually assigns at least a company for a **covering force**. The company would use at least a platoon. Covering force units continuing to hold positions on the rest of the perimeter can divert part of the enemy's forces from the breakout axis.

The battalion **reserve** is usually a platoon; the company reserve is a squad. The reserve deploys where it can exploit the success of breakout units or repel enemy penetration of the covering force.

Artillery and other **units remaining directly subordinate to the commander** occupy firing positions behind the breakout units. From there, they can support the breakout and the movement of remaining forces through the breach.

Mission and conduct. To achieve surprise, the breakout often begins at night or under other conditions of limited visibility; it may even forgo an artillery preparation. The battalion's (or company's) **immediate mission** is to destroy the enemy on the breakout axis and penetrate the perimeter of the envelopment/encirclement. When breaking through a perimeter of envelopment based on an enemy battalion or battalion task force, the frontage of the breakout sector may be up to 1 km for a battalion or 500 meters for a company. The battalion also has a **subsequent mission** to link up with friendly units or to seize a position favorable for conducting further combat ac-

tions. A company acting as part of a battalion has a **direction for continuing the attack** that should contribute to the battalion's subsequent mission. For a company acting independently, this direction could lead to the company's linkup with friendly units or its breakout to an area favoring further combat actions.

The commander normally selects a breakout sector that provides one or more of the following conditions:
- Where he can concentrate forces and fires quickly and covertly.
- Where the enemy perimeter of envelopment has the least depth.
- Where the distance to linkup with friendly units is shortest.

The covering force conducts a diversionary action on another axis to divert enemy reserves from the actual breakout sector. A company could use a platoon for this purpose. Smaller elements from the covering force deploy to cover the flanks of the breakout units and then create a corridor through which the rest of the battalion (company) can move to the breach. After penetrating the enemy perimeter, the breakout unit continues nonstop to the linkup with friendly forces. A portion of the breakout force holds the breach until all reserve and covering forces move through it.

COUNTERATTACK

Defending first-echelon battalions are ready to counterattack under favorable conditions; for example, they counterattack when a much weakened enemy stalls in partial occupation of the defensive strongpoints. The enemy's forces and fires can overwhelm the OPFOR first-echelon defenses and prevent a counterattack. If this happens, units must hold their positions, strike the enemy with all available fires, and create the opportunity for a counterattack by forces of the next higher command. As the enemy advances into the

depths of the OPFOR defense, he may face better-prepared positions. He also encounters a progression of obstacles, second-echelon defenses, and counterattack forces.

Planning

OPFOR commanders at battalion level and above plan counterattacks to restore the defense, should the enemy succeed in breaching forward defensive positions. Commitment of the counterattack force requires the authority of the next higher commander. This force generally attacks from the enemy's flank. When available, tanks normally spearhead the counterattacks, following an intense air and artillery preparation, and with the support of fires of adjacent units. Against greatly superior enemy forces, the counterattack would be by fire only, and not by maneuver forces.

Conduct

A successful counterattack requires the same superiority ratios as an ordinary attack. The main features of OPFOR counterattacks are as follows:
- The enemy's attack must have halted or, at the very least, lost its momentum. Antitank reserves and mobile obstacle detachments are keys to achieving this.
- The enemy must be unable to commit a reserve into the penetration. This can be either because he has already committed it, or because long-range strikes have neutralized it.

The second-echelon company of a battalion, usually in conjunction with brigade counterattack forces, may counterattack enemy forces that have penetrated the forward and rear platoon strongpoints of a first-echelon company. Portions of first-echelon companies (or armored groups) may also participate in the counterattack. If the penetrating enemy force is superior to the counterattack force, the counterattack may be by fire only. The goal of a counterattack is to destroy the penetrating enemy and restore the original line of the defense.

If a counterattack occurs, lower levels of command join in with all available maneuver elements. Although a battalion might not launch a counterattack independently, it would support a brigade or division counterattack. A battalion can provide direct support on the flanks of the main attack, or act as diversions to confuse the enemy.

WITHDRAWAL

Withdrawal is a type of maneuver in which units leave occupied defensive strongpoints and move to new defensive lines in greater depth. It allows units to move out from under attacks by superior enemy forces and occupy more favorable positions for subsequent combat. It can transfer efforts to another axis or draw the enemy into prepared kill zones. (Withdrawal can also occur in the course of offensive battle, as the result of an unsuccessful meeting battle, or when breaking out of an encirclement.) In all cases, the senior commander must authorize the withdrawal. A battalion normally executes a withdrawal as part of the brigade. The mission is to disengage the force in a timely, organized manner without losing its combat capability or exposing the flanks of adjacent units. Figure 6-12 illustrates the basic concept.

Components

The force executing the withdrawal divides into three groups:
- Covering force.
- Rear guard.
- Main body.

MAIN FORCE

WITH ORGANIC RECONNAISSANCE, FLANK, AND REAR SECURITY

Conducts deceptive withdrawal under cover of darkness, weather, supporting fires, and ruse tactics.

REAR GUARD

INITIAL AND SUBSEQUENT POSITIONS

Independently fights a delaying action to cover movement of main force. Applies maximum use of fires.

COVERING FORCE

Deceives enemy and covers initial withdrawal of main body.

Figure 6-12. Basic concept of withdrawal.

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Covering Force

The covering force has the mission to deceive the enemy and cover the initial withdrawal of the main body. This element normally comes from units along the forward edge of the defense, and equates to approximately one-third of the defending unit's combat power. For example, each forward-deployed company would designate one reinforced platoon for this mission. In some cases, a first-echelon battalion may designate a company.

Rear Guard

The rear guard covers movement of the main body and fights a delaying action if the enemy attempts to maintain contact during the pursuit. It must be able to fight independently of the main body and covering force. A company or smaller force normally performs this duty for the battalion, and a reinforced second-echelon battalion would do so for the brigade. Normally, it is a combined arms force consisting of tanks (if available), motorized or mechanized infantry, artillery, and engineers. Making maximum use of artillery, mortar, and long-range ATGM fires, it fights through a series of delay positions to prevent enemy interference in the withdrawal of the main body. The actions taken by the rear guard, both in mission and force disposition, are not unlike those of an FD fighting in the security zone.

Main Body

The main body is the bulk of the withdrawing force. It breaks contact and attempts to withdraw without disclosing its intentions to the enemy. For deception, it may withdraw under cover of darkness or adverse weather conditions, use supporting fires to cover noise, or employ a ruse. It would also take advantage of the concealing properties of terrain to move successively to platoon, company, and battalion assembly areas. On arrival at each assembly area, subordinate units take their places in the parent unit's march formation and continue the withdrawal.

Conduct

The organization and execution of withdrawal take place under strict secrecy and security. The commander's withdrawal order is detailed and includes--

- The mission.
- Routes.
- Formation to be used.
- Delay positions.
- Control measures.
- Information on the new defensive position.

A brigade and its subordinate battalions conduct a withdrawal in the following sequence:

First-echelon battalions designate platoons (or companies) to act as the covering forces, which attempt to portray a normal defensive pattern to the enemy. The brigade commander designates a rear guard, normally the second-echelon battalion, reinforced with part or all of the brigade's organic artillery and engineer assets.

On order, the **main body** withdraws through the rear guard in the following order:

- Unengaged maneuver forces, including the second echelon or reserve (less the rear guard), and combat service support elements.
- Artillery and combat support elements (less those attached to the covering force and rear guard).
- First-echelon maneuver units (less covering forces).

The main body proceeds on multiple routes all the way back to either the new defensive position or an assembly area.

Once the main body has completely passed through the rear guard, the **covering forces** break contact on order. They withdraw suddenly, usually all of them simultaneously. If the enemy detects their withdrawal and begins pursuit, covering forces leapfrog their units to the rear in order to be mutually supporting. After withdrawing through the rear guard, they join their parent units within the main body.

The **rear guard** fights a delaying action. It takes up its designated initial positions in advance and holds them until a prescribed time or an order to withdraw. Then it leapfrogs to successive positions, using--

- Smoke.
- Engineer-laid minefields.
- Demolitions.
- Artillery fire concentrations.
- Ambushes.
- Attack helicopters.
- Fixed-wing air strikes.

The distance to subsequent positions should be enough to force the enemy to pause and reorganize before attacking the next line. If the enemy does not pursue, the rear guard assumes march formation and joins the main body as quickly as possible.

RELIEF

OPFOR doctrine stresses the temporary nature of the defense. It emphasizes the need for counterattacks as soon as possible to initiate a renewed offensive. The relief can achieve this end.

Concept

Relief involves an organized transfer of defensive positions, strongpoints, areas, sectors, and zones in a combat situation from one unit to another. The units being relieved have usually sustained considerable losses and are on the defense. A relief can also enable a fresh unit to occupy the defensive positions of the relieved unit in preparation for a renewed offensive.

Because units being relieved are usually in direct contact with the enemy, they are subject to enemy fire and ground attacks. Therefore, the OPFOR organizes relief carefully, executing it quickly and secretly. It attempts to preserve as much of the unit's combat capability as possible. As a rule, a relief occurs at night or during periods of reduced visibility. It is important to conceal the timing and sequence of the relief, so that the enemy cannot choose that moment of vulnerability to launch an attack.

Conduct

A **battalion relief** begins with the brigade commander establishing the relief sequence. The battalion commander relieving and the one being relieved conduct a joint reconnaissance of the defensive position. During this reconnaissance, the commanders coordinate routes to and from the relief areas, traffic control posts, locations for guides to meet the relieving units, and the sequence of relief. They also determine the time to start and complete the relief, security measures, and actions in the event of an attack during the relief. In addition, the battalion commanders review the present system of fire and observation and obstacles and minefields supporting the position.

Should the enemy attack during the relief, all available units, including the relieving battalion, attempt to repel the attack. All of these units fall under the control of the commander being relieved. The reserve of the unit being relieved may counterattack. It is the last element to withdraw from the defense area.

At the appointed time, the relieving battalion moves from its assembly area to the relief area by concealed routes. It carries out the relief successively by platoons. The first forces to move are infantry and AT units, followed by mortar, artillery, and tank units. If the relief involves battalions of the same brigade, tanks may remain in place, transferring their attachment. If the relieved battalion had a platoon acting as a combat security outpost, that platoon would be the last relieved. Once in position, the relieving units establish observation posts and their system of fire.

Relieved commanders transfer their positions and provide information on enemy activities and routines. They acquaint relieving commanders with the locations of obstacles and minefields and with the primary directions of fire. Established communications remain intact, and wire lines remain in place, passed on to relieving units. The relieving unit thoroughly checks and verifies all engineer installations, including minefields and obstacles, with respect to boundaries, passages, and degree of readiness.

The relieving battalion commander checks the locations and weapon positions of his subordinate units to ensure that his forces are ready for combat. The relieving battalion attempts to maintain the same routine and level of activities that existed before the relief. The relieving commander reports to his superior that the relief is complete. This action officially terminates the relief. The relieved battalion then withdraws to assigned assembly areas to await its next mission.

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Chapter 7
Artillery Support

Artillery support is one of the most decisive elements in modern combat. It is the principal means of achieving fire superiority. Specifically, artillery support provides the OPFOR commander timely, high volume, lethal and suppressive fires. The ability to concentrate fires is one of the primary means of attaining a favorable force ratio against an enemy in a given sector. Planners recognize the need to integrate all weapon systems into a coordinated fire support plan.

CONCEPTS

Artillery support concepts are continuously undergoing modification. All operations stress the need to improve interaction between supporting and supported units.

Fire Support

Artillery support is a part of the larger concept of **fire support**. The OPFOR concept of fire support includes all combat support actions provided to ground forces by artillery, missile, aviation, and naval fires. However, this chapter will focus on the artillery support. Surface-to-surface missiles, although available to OPFOR commanders upon request from the military region commander, are a national level asset, and remain under the control of the General Staff. As such, they are beyond the scope of this chapter. Also, support from aviation is discussed later in Chapter 9 and support from naval fires in Chapter 12 (Naval and Amphibious Operations) in the *Light OPFOR Operational Art Handbook.*

Fire Superiority

The OPFOR defines fire superiority as a firepower advantage over the enemy in a given battle or operation. It believes that fire superiority generally belongs to the side that--
- Opens fire first.
- Achieves surprise.
- Delivers accurate and effective fire.
- Masses fires effectively.
- Effectively uses counterbattery fire.

Fire superiority consists of a unit's ability to execute its own fire missions successfully while suppressing enemy counterfire. In the offense, an extensive fire preparation can win fire superiority. In the defense, the OPFOR tries to achieve fire superiority by quickly massing fires in selected sectors for a given period of time. Military planners stress that massed firepower is the key to success in combat.

ASSETS

Artillery, as defined by the OPFOR, includes the following weapons systems:
- Multiple rocket launchers (MRLs), guns, howitzers, gun-howitzers, and mortars.
- Surface-to-surface missiles (SSMs).
- Free rockets over ground (FROGs).
- Antitank (AT) artillery.

Artillery is capable of suppressing enemy direct fire weapons, attacking enemy artillery and delivering scatterable mines to isolate and interdict enemy forces. It can screen friendly activity with smoke or illuminate the

battlefield to facilitate combat at night. Artillery can delay or disrupt enemy forces in depth and support aviation operations by suppressing enemy air defenses. Also, almost all cannon artillery can use direct fire methods for self-defense protection.

Equipment

Field artillery primarily consists of mortars, howitzers, field guns, gun-howitzers, and MRLs. Field artillery units are primarily self-propelled in the mechanized infantry division. However, both the motorized and light infantry divisions have mainly towed artillery. All divisions use truck-mounted MRLs. Towed guns are lightweight, low-cost, simple, and extremely mobile on hard surfaces. Their disadvantages are a lack of cross-country mobility, and no gun crew protection against nuclear, chemical, or conventional counterbattery strikes. The OPFOR will continue to employ towed weapons. Current emphasis is on acquiring self-propelled artillery systems, and on upgrades to improve lethality, mobility, and survivability of older systems.

Surface-to-Surface Missiles

Even though the control of SSMs, as stated above, resides at the national level a few words about them are still necessary. Surface-to-surface missiles have an internal guidance system that can somewhat modify its ballistic trajectory in order to deliver various types of warheads into the desired target area. Although SSMs have many advantages such as relatively large warheads, far greater range than artillery, they generally lack sufficient accuracy for tactical level point targets. (See Chapter 6 in *Light OPFOR Operational Art Handbook*.)

FROGs

Considered to be a tactical artillery support weapon, FROGs belong to a family of unguided, spin-stablize, short-range rockets. The most common FROG system usually consists of a launcher vehicle capable of launching one rocket at a time, plus one or more reload vehicles carrying up to 3 rockets each.

Multiple Rocket Launchers

Multiple rocket launchers can deliver strikes at decisive moments in battle. The MRL is an excellent area coverage weapon, and its rapid ripple fire capability is an excellent delivery system for chemical agents, high explosives (HE), submunitions, smoke, and scatterable mines and possibly fuel-air explosives. Surprise and massive shock often result from the sudden impact of MRL munitions in an area. Large-caliber MRLs, if available, can deliver high-volume fires beyond the range of tube artillery, which approaches the lethality level of SSMs.

Field Guns

Field guns are generally distinguished by having longer barrels, higher muzzle velocities, flatter trajectories, being heavier, and thus less mobile than howitzers for instance. Guns have a primary advantage of increased range. They can--
- Kill troops in the open.
- Destroy buildings above ground level.
- Engage rapidly moving targets.
- Engage enemy artillery with counterfire.
- Bombard distant targets such as artillery batteries, headquarters, and columns moving in the rear.

Howitzers

Howitzers are generally lighter, more mobile, have shorter barrels, lower muzzle velocity, less range, and capable of higher trajectories than field guns for instance. Howitzers can--
- Hit indirect targets.
- Destroy or neutralize enemy defensive positions in defilade.

Gun-Howitzers

Gun-howitzers generally combine the more desirable features of field guns and howitzers such as better range, higher trajectories, and mobility. The gun-howitzer can--
- Provide tactical flexibility.
- Deliver effective fire on a variety of enemy targets

Mortars

Mortars are probably the most basic artillery weapon in that they are relatively uncomplicated, lightweight, have a high rate of fire, short barrels, limited range, and excellent mobility. Mortars can--
- Provide almost instaneous, rapid and accurate artillery fire.
- Keep up with organic maneuver units.

Antitank Artillery

Antitank weapons are also a part of the artillery support system. They are capable of delivering accurate point fire at direct fire ranges. AT guns also have an indirect fire capability. Dual-purpose artillery, such as AT guns, combination guns (if available), and many field guns can conduct both direct fire and indirect fire missions. See Chapter 8 for more detail.

Ammunition

The primary purpose of artillery pieces is to deliver ammunition that causes damage or lethal effects on the selected targets. A secondary purpose is to deliver utility rounds such as: illuminating, smoke, and radio frequency expendable jammers (if available).

Ammunition Types

Conventional shells available to the OPFOR are HE, fragmentation, and fragmentation-HE. They are the standard projectiles for all howitzers and guns. High explosive shells can destroy fortifications, and fragmentation shells are effective against personnel and equipment in the open. Fragmentation-HE shells have fuzes for either instantaneous or delayed detonation. A variable time fuze is available for airburst effects. Also, proximity fuzes provide increased lethality air-burst effects against vehicles and personnel in the open. Special ammunition types that may or may not be available for various artillery systems include--
- High-precision.
- Chemical.
- Antitank.
- Smoke.
- Illuminating.
- Concrete-piercing.
- Rocket-assisted projectile (RAP).
- Scatterable mines.
- Improved conventional munitions (ICM).
- Flechettes.
- Fuel-air explosive (FAE).

Although identified above, be aware that OPFOR **chemical** delivery capability has limits, and chemical munitions are under strict national control. Principal delivery means are artillery, and MRLs. OPFOR cannon artillery

is capable of delivering chemical munitions. Incapacitating agents, mainly riot control-type, are available to tactical commanders. (See Chapter 14, Chemical and Smoke Support.)

Basic Load

The **basic load** is a fixed amount of ammunition specified as a standard reload quantity for each weapon or weapons system. For tanks or self-propelled artillery this is the amount of ammunition carried on board. However, the basic load for a towed artillery piece is the amount of ammunition carried by the accompanying supply vehicle. OPFOR planners use the basic load to compute ammunition and transportation requirements for the mission.

ORGANIZATION

Although not the focus of this chapter brief mention of army- and national-level artillery organizations is necessary. It is these organizations that provide the core assets for artillery group support to the districts and divisions that appears later in the "Organization for Combat" section.

The standard artillery regiment found at division or military district level is shown in Figure 7-1. Its cannon battalions can either be all self-propelled or all towed systems. Also, unlike higher level artillery regiments it does have an organic 122-mm MRL battalion. Subsequent paragraphs iterate the level where the self-propelled or towed cannons are as well as their respective gun calibers.
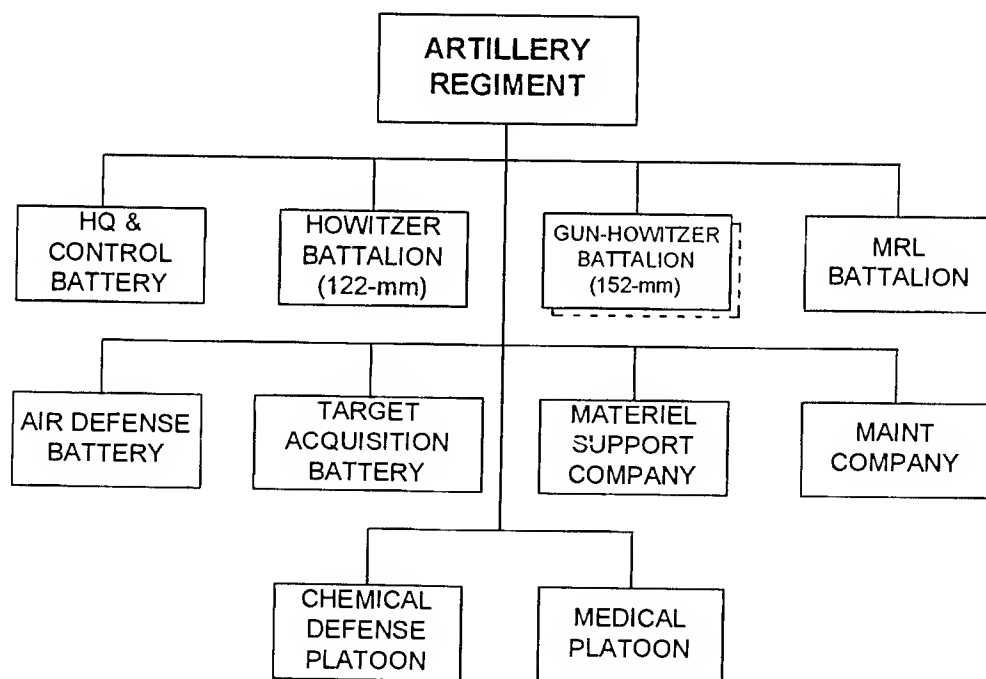
Figure 7-1. Artillery regiment.

Army and National

An army can have either an artillery regiment with 4 battalions or a brigade with 4 or 5 battalions. Neither this artillery regiment or brigade has an organic MRL battalion. The national level-asset pool, while having similarly equipped artillery regiments or brigades, has MRL brigades as well. The artillery regiments or brigades are equipped with either 152-mm guns or gun-howitzers, and can be either self-propelled or towed. The MRL brigade can be either 122- or 220-mm caliber.

Military Districts

Each military district has an organic **artillery regiment** consisting of a howitzer battalion, one or two gun-howitzer battalions, and an MRL battalion as shown in Figure 7-1. The cannon battalions of this regiment could be either all self-propelled or all towed systems. The cannon caliber is 122 mm for the single howitzer and MRL battalions, and 152 mm for the 1 or 2 other cannon battalions.

Divisions

The mechanized infantry divison's artillery regiment is equipped with SP cannons. Both the motorized and light divisions' artillery regiment, however, have towed cannon systems. The mechanized infantry division would have 1 battalion of 122-mm SP howitzers and 1 or 2 battalions of 152-mm SP howitzers. Motorized and light divisions' artillery regiment has the same caliber relationships at battalion level as the mechanized, but has towed cannons instead.

Mechanized Infantry and Tank Brigades

All have a 122-mm SP howitzer battalion. A separate mechanized brigade also has a mortar battery equipped with either 120- or 82-mm mortars.

Separate Motorized and Light Infantry Brigades

All have a towed 122-mm howitzer battalion, and a mortar battery. The mortar battery uses 82- or 60-mm mortars.

Divisional Motorized and Light Infantry Brigades

All have only one 120- or 82-mm equipped mortar battalion.

Infantry Battalions

The mechanized battalion has a mortar battery. The motorized and light infantry battalions have a mortar platoon in the weapons company.

ORGANIZATION FOR COMBAT

OPFOR division- and brigade-sized battles require artillery support exceeding the capabilities of organic resources. Allocation of artillery assets is a "top-down" process. The allocation of artillery by a higher headquarters to maneuver forces for the execution of a given battle or operation follows these principles:

- The expeditionary army allocates artillery to divisions, especially those in the main attack.
- Regions on the defense allocate artillery to subordinate districts, based on

their needs and the probable locations of the enemy's main attack.
- A military district or division may place some of the artillery with its brigades.

- Second-echelon forces normally do not receive artillery reinforcement until the time of their commitment.

(See Figure 7-2 for an example of artillery group formation.)

NOTES:
1. The distribution of artillery battalions shown above is only an example. Actual allocation patterns depend on the situation and the mission of the receiving organization.
2. In this example, the Army receives from national level the assets of one artillery brigade (5 tube battalions) and one MRL brigade (3 MRL battalions).
3. The motorized infantry division in this example is in the army's main attack, and the two brigades on the right are the division's main attack.
4. It is possible that a 2d-echelon division may give up artillery assets to reinforce a 1st-echelon division. This is only an option the army commander could use.
5. The brigade's organic mortars combine part of the BrAG. An artillery or mortar battalion or battery in the BrAG may also be temporarily subordinated to first-echelon maneuver battalions for specific missions.

Figure 7-2. Artillery group formation (example).

Temporary, mission-oriented **artillery groups** form the framework for control of artillery fires. The formation of groups allows maximum use of assets, provides continuous support, and retains the required degree of centralized control. Artillery groups usually consist of two or more battalions and can include guns, howitzers, gun-howitzers, and MRLs. These battalions do not have to colocate in order to function as a group. It is necessary for their positions to be within range of the targets for their massed fire. A designated commander and staff provide command and control of an artillery group. This is normally the commander of the artillery unit that is the nucleus of the group.

Offense

Groups formed to support the offense remain intact at least until the supported unit achieves its immediate mission, and perhaps its subsequent mission. During the accompaniment phase, attached artillery may receive missions from the artillery commander to concentrate fires against counterattacks or to support commitment of the second echelon. Commitment of second-echelon forces usually occurs during the exploitation and pursuit. Artillery groups may reorganize to provide additional support for these forces.

Division Artillery Group

In addition to its organic artillery regiment, a division may receive artillery assets from higher levels to support its missions. The division commander allocates this artillery to form a division artillery group (DAG) and several brigade artillery groups (BrAGs). The division may organize more than one DAG due to span of control, number of battalions available, and assigned missions. The DAG varies in size from two to four battalions and pro-

vides general support for the division. It assists the army with the counterbattery mission. If capable, it may perform this mission itself.

Military District Artillery Group

The districts subordinate to the region may or may not have artillery organic at district level. For this reason, most of the artillery received by a region is normally suballocated to the districts. Once the district commander takes the artillery allocated by the region, he has several options. Depending on the amount of artillery received and the scope of his offensive actions, he may keep some at district level and allocate the remainder to his separate brigades. This could result in the formation of an military district artillery group (MDAG) and several BrAGs. The brigade conducting the main attack receives the most artillery. The district commander may organize more than one MDAG due to span of control, number of battalions available, and assigned missions. If the enemy defense is over an extended frontage, he may also allocate all artillery to subordinate brigades. If formed, the MDAG varies in size from two to four battalions and provides general support to the district. It may assist the region with the counterbattery mission. If the region does not form an military region artillery group, the district can perform this mission itself.

Brigade Artillery Group

When a first-echelon maneuver brigade receives additional artillery from its parent division or district, its organic and allocated artillery can form a BrAG supporting the brigade. Such a group may consist of two to four battalions, and can include the brigade's organic mortars. However, a brigade receiving longer-range artillery from higher level can attach its organic mortars to one or more of its subordinate maneuver battalions.

Defense

The artillery **organization for combat** in the defense parallels that of the offense. Artillery groups occupy positions from which they can accomplish their primary missions and retain the capability of massing fires in support of forward positions. Within a division or district, the brigade(s) expecting the enemy's main attack receive the most artillery for their BrAGs. Groups created for defensive combat normally remain intact until the offense starts again. Due to the primarily defensive missions of most military districts, MDAGs, formed for the defense are much longer-lasting there.

COMMAND AND CONTROL

At brigade and division or district, there is an artillery officer responsible for planning and coordinating artillery fires on the staff of maneuver unit commanders. His title is **chief of artillery**. This officer controls, but does not command, the artillery units organic or allocated to his maneuver unit. The commander of the organic or allocated artillery unit commands and is directly responsible for the performance of his unit. At maneuver battalion level, the commander of an attached artillery subunit is the battalion commander's fire support coordinator. He advises the commander on how best to use available fire support assets.

Division or District and Brigades

The artillery groups form the framework for the control of artillery fires in the division or district. Centralized decisions govern the employment of artillery. The division or district commander exercises control over all organic and allocated artillery. He bases his decision on the recommendations of his chief of artillery. The following procedures apply to this process--

- The division or district commander specifies the artillery organization for combat and the tasks for the artillery.
- The chief of artillery conducts and coordinates fire planning.
- The DAG or MDAG commanders report directly to the chief of artillery.
- BrAG commanders report directly to the supported maneuver brigade commander, but retain contact with the division or district chief of artillery.
- Artillery battery and battalion commanders keep their supported maneuver commanders informed and report to their controlling artillery headquarters.
- The chief of artillery coordinates with intelligence section and the chief of reconnaissance for targeting data.

Maneuver Battalions and Brigades

It is the OPFOR practice to augment organic artillery available to maneuver units by allocating additional assets, either through attachment or assignment as supporting artillery. An **attached** artillery unit is under the operational control of the maneuver unit commander. An artillery unit assigned to **support** a maneuver force remains subordinate to its parent artillery unit or group, but carries out missions assigned by the maneuver commander.

Attached

The brigade, division or district commander may attach an artillery battalion or battery to a first-echelon maneuver battalion during a penetration, deep attack, meeting battle, or some defensive actions. The maneuver battalion commander gives orders to an attached artillery battalion or battery. When he receives an entire artillery battalion he can allocate its batteries to support his maneuver

companies. He may assign missions to the artillery units during critical times:

- When they accompany the advance guard or forward detachment.
- When they penetrate enemy defenses.
- When they support the commitment of second-echelon forces.
- When they repel a counterattack.

If designated as attached, the artillery battalion or battery no longer belongs to an artillery group. This artillery battalion may support both the maneuver battalion and brigade.

The same type of command relationship may also exists with artillery attached to a divisional motorized or light infantry brigade. Like a maneuver battalion, these brigades have only mortars as organic fire support. Therefore, the division commander could attach a howitzer or gun-howitzer battalion to one of his brigades even if he does not form a BrAG for it.

Supporting

A supporting battalion remains subordinate to the parent artillery unit or the artillery group. If a battalion in the BrAG has no brigade missions, it can fire missions for the battalion that it supports. The maneuver battalion commander cannot task its batteries separately to support his subordinate companies, even though supporting and supported commanders may be colocated. A supporting artillery battalion carries out missions for the maneuver battalion only if the artillery group commander permits or specifically directs the action.

Fire Plans

The fire plan of an attached artillery battalion or battery reflects the specific support of the battalion or brigade to which it is attached. The fire plan of a supporting battalion reflects the tasks of the parent maneuver force

and its artillery group. The senior commander allocating the artillery can change the mission of attached or supporting artillery during the course of combat. The period of attachment normally covers the time needed to accomplish a particular tactical mission. This period could vary from a matter of hours to several days.

Coordination and Communications

The artillery commander colocates near the commander of the maneuver unit he supports and usually has face-to-face **coordination**. He can also enter the command net of the supported unit. Artillery commanders retain rigid control of the deployment of weapons and observation posts, except when subordinate units have special missions. This allows continuous artillery support in all phases of combat.

Radio and wire are the primary means of **communication**. Artillery units also use messengers, visual, and sound devices. Senior and supporting units establish communications to subordinate and supported units. Radio is the primary means in fluid combat situations. Wire is a backup mode and is especially important in static combat. Whenever subordinate units remain in one location such as assembly areas or defensive positions for any length of time, they use wire communications. To provide redundancy, artillery wire nets parallel the wire nets of the supported units.

FIRE PLANS

Artillery support planning occurs at the highest level possible. Planners subscribe to a "top-down" philosophy in the planning and allocation of artillery support. The planning process begins with an estimate of the situation. This estimate includes the following:

- Scheme of maneuver of supported forces.
- Locations and type of enemy targets.

- Required level of damage.
- Delivery means and ordnance available.

Besides considering target dimensions, degree of fortification, mobility, and depth into the enemy's defense, the fire planning process includes--
- Assignment of tactical missions.
- Determination of ammunition requirements.
- Formulation of a detailed fire plan.

The artillery commander at each level coordinates the fires under his control. He determines new requirements and missions and, with the chief of artillery, makes suggestions to the maneuver commander about adjustments in tactical organization as the situation develops.

The division commander, his chief of artillery, and other staff members establish the basis for division artillery fire planning during the reconnaissance of the area of anticipated action. During this reconnaissance, the commander refines the organization for combat and means of coordination. The maneuver commander gives the artillery representative the information base to determine the following:
- Targets for artillery to fire upon.
- Priority of each target.
- Sequence in which to attack targets.
- Time to attack each target.

Offense

Fire planning for an attack is a deliberate and precise process. Planners consider weapons and ammunition, target characteristics, and the plan of the maneuver commander in terms of target damage criteria. Figure 7-3 illustrates an example fire plan for an OPFOR 122-mm howitzer battalion.

Defense

The defensive **fire plan** tries to achieve the following:
- Annihilation or neutralization of the enemy's artillery, rocket systems, anti-tank assets, and attack helicopters.
- Neutralization of enemy command and control centers.
- Neutralization of enemy columns and troop concentrations.
- Neutralization of the enemy in front of forward defenses.
- Neutralization of enemy forces that have penetrated forward defenses.
- Coverage of gaps and flanks in friendly sectors, obstacles and natural obstructions.

RECONNAISSANCE AND TARGET ACQUISITION

The success of the fire support plan depends on timely and accurate information. The basic intelligence requirements for fire support planning are--
- Disposition of enemy forward units.
- Locations of enemy artillery and other fire support systems, observation posts (OPs) and radar sites.
- Locations of enemy armor and troop concentrations in rear areas.
- Locations of fortifications and barriers.
- Locations of enemy command and control facilities.
- Terrain analysis of the area that the enemy occupies.
- Post-strike analyses.

Preparatory Fires					
Time (Duration of Fire)	Method of Fire and Targets	Signals	1st Battery	2nd Battery	3rd Battery
H-0:40 to H-0:27 (13 min)	FIRE ASSAULT: Artillery and mortar batteries, CPs, radar, platoon strongpoint of companies in first echelon of defense.	Green flares SNOWSTORM 2121 (Radio/telephones)	TGT 60 90 rds Sector 11 120 rds	TGT 18 140 rds Sector 11 90 rds	TGT 40 80 rds Sector 11 120 rds
H-0:27 to H-0:17 (10 min)	FIRE ASSAULT: Platoon strongpoints within deeper defensive positions; destruction of targets by direct fire; controlling fires against artillery and mortar batteries.	Star flares HAIL 3131 (Radio/telephone)	Sector 16 120 rds TGT 69 14 rds	Sector 16 165 rds	Sector 16 165 rds
H-0:17 to H-0:05 (12 min)	FIRE ASSAULT: Platoon strongpoints within companies of first echelon of defense.	Yellow flares RAIN 4141 (Radio/telephone)	Sector 11 120 rds	Sector 11 150 rds	Sector 11 150 rds
H-0:07 to H-0:01 (6 min)	OVERLAPPING FIRE: 1st Battery fires at artillery and mortar batteries. (Overlaps H-Hour transition from preparatory to supporting fires).	Yellow flares RAIN 4141 (Radio/telephone)	Target 60 60 rds	TOTAL ROUNDS PREPARATORY 1584	

Supporting Fires *					
Time (Duration of fire)	Method of Fire and Targets	Signals	1st Battery	2nd Battery	3rd Battery
H-0:05 to H-Hour (5 min)	SUCCESSIVE FIRE CONCENTRATIONS On line 1 WOLF (Sector 11)	Line 1 WOLF Green flares HURRICANE 5555 (Radio/telephone)	Overlapping Fires, as above	45 rds	45 rds
ON CALL	5 minute fires on line 2 RAT (Sector 21)	Line 2 RAT Start flares THUNDER 6666 (Radio/telephone)	50 rds	50 rds	50 rds
ON CALL	5 minute fires on line 3 TIGER (Sector 16)	Line 3 TIGER Yellow flares TYPHOON 7777 (Radio/telephone)	32 rds	32 rds	32 rds
ON CALL	FIRE CONCENTRATIONS Individual targets BARRAGE FIRES	Readiness to open fire on targets 20, 25, 32, 33, 69, 71 Targets A and B			
* These fire concentrations and barrage fires are contingency plans to use depending on the progress of the attack.					

Figure 7-3. Illustrative fire plan, 122-mm howitzer battalion
in attack from positions in direct contact (example).

Observation Posts

Artillery units deploy a network of **observation posts** to control artillery fires and gather target intelligence. The network of observation posts includes command observation posts and forward observers. The numbers and types of observation posts established depend on the requirements of the battle. These observation posts are as mobile as the forces they are supporting. Several reconnaissance capabilities, such as flash ranging and visual observation, can occupy a single post.

Artillery reconnaissance patrols have the primary mission of locating enemy artillery units. The patrols can also set up OPs behind enemy lines to adjust artillery fire and to report on enemy organization and deployment. Other OPs send intelligence data to the command and observation post (COP). The commander determines which targets to engage. Then the COP relays the target to the firing position. The availability and use of global positioning system (GPS) and laser rangefinders or laser target designators would allow OPs to locate critical targets for high-precision artillery strikes.

Command Observation Posts

The command observation post (COP) serves as both an OP and command post (CP). Since the battalion is the basic fire unit, its COP is the place where the battalion commander makes decisions and issues orders. The artillery commander locates the COP to observe his zone or sector of fire. From it, he studies the target area and terrain, follows the progress of friendly forces, and directs or coordinates artillery fires. In most cases, the artillery commander colocates his COP with the COP of the supported maneuver unit commander. Artillery batteries and firing platoons also have their own COPs.

The COP normally contains the artillery commander, and fire direction, communications, and reconnaissance personnel. Both battalions and batteries have fire direction centers (FDCs) at the firing position. The COP and the FDC conduct fire direction computations simultaneously. Often, the succession of command is COP, FDC, and then per order. The COPs and FDCs use tracked or wheeled **artillery command and reconnaissance vehicles (ACRVs)** with--

- Day/night observation and rangefinding equipment.
- Topographic survey equipment.
- Artillery fire direction computation equipment (manual and electronic).
- Communications equipment.

However, lower-priority units may use light or utility trucks for command and fire direction vehicles.

Forward Observation Posts

Artillery commanders can establish one or more forward observation posts (FOPs) to supplement the COP. At the battalion and battery levels, the FOPs contain the headquarters platoon leader, a scout, and a radio man. An FOP may be with the supported unit commander or with one of the advance maneuver elements. The FOP assures continuous close fire support for the maneuver forces when the COP is displacing. The FOP may be on foot, in a truck, or mounted in a tracked **mobile reconnaissance post (MRP)** vehicle. An MRP has a battlefield surveillance radar as well as observation and rangefinding equipment. In the offense, the MRP may advance closely behind or within lead motorized infantry or tank units. They conducts reconnaissance on the move or during short halts. During a march, MRPs move as part of an artillery reconnaissance patrol in the forward security element of the supported motorized infantry or tank unit.

This single vehicle can perform reconnaissance and adjust artillery fire on targets while located with that unit. In the defense, FOPs may form part of the combat security outposts in the security zone.

Lateral Observation Posts

The artillery commander may establish a lateral observation post (LOP) in order to cover areas not observable from the command and forward observation posts. At battalion level and higher artillery formations, the LOP accurately locates targets, reference and registration points, and can adjust fire. The LOP is usually on the flank of the supported unit and should have a good view of the artillery unit's zone of responsibility. The artillery battalion or the division's artillery regiment may send reconnaissance and communication personnel to form the LOP.

Dummy Observation Posts

The OPFOR may use a dummy OP to confuse the enemy about the actual position of the COP. After the commander establishes a functional COP, scout observers construct a dummy COP. Dummy OPs simulate radio antennas and other equipment to give the impression the position is in use. They normally have applications only in static situations.

Target Acquisition Battery

The artillery regiment of an infantry division has an organic target acquisition battery. This battery provides the bulk of the division's artillery intelligence. The battery includes the following units:
- Sound-ranging platoon.
- Reconnaissance platoon (with a countermortar/counterbattery radar section and two surveillance radar sections).
- Topographic survey platoon.

Other Reconnaissance Assets

Ground or air forces can perform reconnaissance. Mobile and/or fixed elements of ground forces or special operations forces, using visual, instrumental, and photographic means can conduct ground reconnaissance. Fixed-wing aircraft, helicopters, and remotely piloted vehicles can perform aerial reconnaissance. Special operations forces can conduct long-range reconnaissance in the enemy's rear area to locate targets for artillery or missile strikes.

Target Priorities

Target priorities vary according to the stage of the battle. The locations and types of targets form the basis for developing fire support priorities. See paragraphs under "Support in Offense" and "Support in Defense" for target priorities during various phases. During the various phases of artillery support, some of the artillery is available for serving newly detected targets. Even for preplanned fires, the preference is to service targets with observed fire. The majority of these targets can move, and may remain in their combat positions only for a short time. Therefore, it is critical for the OPFOR to destroy or neutralize high-value targets immediately after detecting and locating them.

The OPFOR may also employ precision artillery strikes as an economical means to countering high-technology forces. Precision artillery strikes include: improved target locating devices or procedures, more timely processing of target acquisition data, improved gun systems, and high-precision munitions, if available.

MOVEMENT

During a **tactical march** the senior commander determines the length of a day's march and the average speed. An artillery march column has 25-to 50-meter intervals between vehicles and 100 meters between batteries. An artillery battalion occupies 1.5 to 2.5 km of road space, depending on vehicle spacing. At night, a column of tracked and wheeled vehicles can move at an average speed of 15 to 20 kilometers per hour (kph) on paved roads or 12 to 15 kph on dirt roads. During the day, the column has an average speed of 20 to 30 kph on paved roads or 15 to 20 kph on dirt roads.

In planning **deployment** of its units, OPFOR artillery commanders follow the **"rule of a third."** When only a third of the maximum range of their artillery remains in front of the attacking OPFOR troops, they move a third of their force forward. Once redeployment starts, no more than a third of the available guns is moving at any one time. This leaves two-thirds of the artillery in position to support the battle. The artillery regiment at division redeploys by **battalions** whenever possible, with a typical bound being 5 to 10 km long. Counting displacement and emplacement time, it takes a towed howitzer battalion about an hour to move that far by day. By night it can take up to 1.5 hours.

However, some units, especially SP howitzers, may displace by **battery**. In the offense, an artillery battalion can leapfrog its batter

ies forward individually in bounds of some 3 to 4 km. By day, it takes a towed howitzer battery about 30 minutes to move, from receipt of the movement order until it is ready to fire the first round in its new position. At night, the same move requires about 45 minutes.

TACTICAL DEPLOYMENT

On the basis of the fire plan, artillery deploys to provide preparatory fires and the initial fire support of the attack. Figure 7-4 illustrates tactical deployment guidelines for artillery. Two factors govern deployment: continuity and dispersion. The need for **continuity** of fire support leads to groups being deployed well forward to eliminate the need to relocate. **Dispersion** is the requirement to space batteries and battalions so that a single nuclear burst cannot destroy them.

Artillery Battalion

Battalion firing positions normally are a large triangle with three batteries dispersed to each of the three points of the triangle. Figure 7-5 shows an example of a standard artillery battalion combat formation. Batteries in the battalion area locate 1,000 to 2,000 meters apart with a 20- to 50- meter interval between guns. The triangle forms a forward or reverse wedge pointed toward or away from the enemy. The battalion chief of staff operates the battalion fire direction center (FDC) which is inside the triangle of batteries and located 300 to 1,000 meters from one of the batteries.

Distances	Mortars	Guns and Howitzers	MRLs
Between weapons	20-50 m	20-50 m	50-60 m
Between batteries	1,000-2,000 m	1,000-2,000 m	1-2 km
From the forward edge of enemy defenses	500-1000 m	4-8 km (AAG) 3-6 km (DAG/MDAG) 1-4 km (BrAG)	4-8 km (AAG) 3-6 km (DAG/MDAG)

Figure 7-4. Tactical deployment guidelines for artillery.
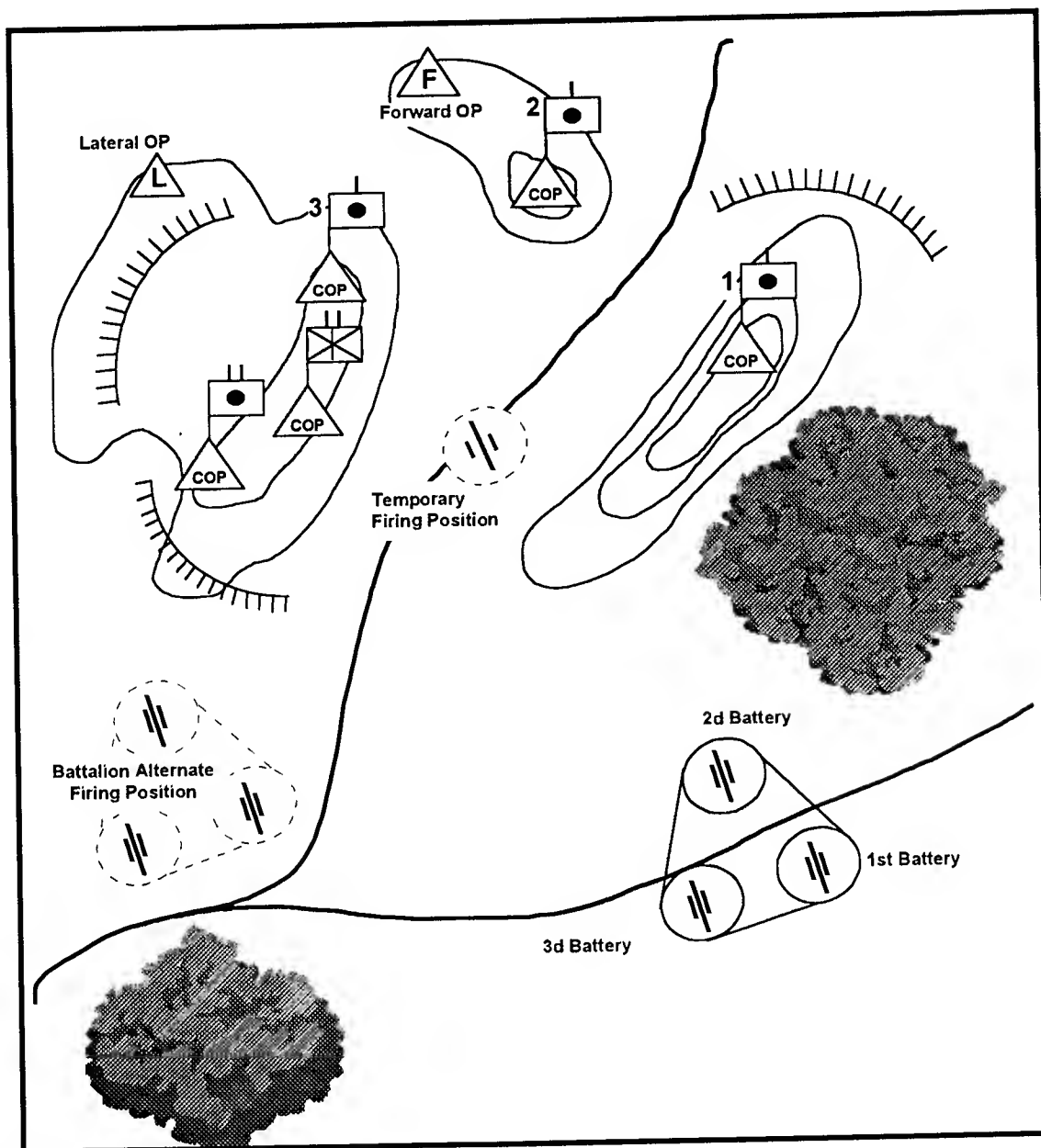
Figure 7-5. Artillery battalion combat position.

The artillery battalion commander can select the battery firing location, but it is normally the responsibility of the battery commander. Both consider local factors in concealing firing positions: wooded areas, foothills, and thickets. The commander can also consider concealing his forces in fortified positions or underground facilities to enhance survivability. The OPFOR conceals the entrance to, and exit from, all gun positions as much as possible. For an unconcealed or open gun position, the battery must have enough range to accomplish a direct fire mission at the weapons' maximum effective direct fire range. The battery senior officer/gun position officers select individual firing positions. The firing position affords cover for the gun crews and their ammunition, and it should have interlocking fires with adjacent weapons.

An artillery battalion utilizes primary, alternate, and temporary gun positions in the offense. The temporary position enables the artillery unit to accomplish short-term or emergency missions. Such missions may include roving fire support or defending a forward position. The defense requires primary, alternate, temporary, and dummy positions.

Artillery Battery

The increased mobility of self-propelled artillery allows the OPFOR to move artillery batteries, platoons, and individual guns within an assigned firing position area to escape enemy counterbattery fire. Within his assigned area, the battery commander selects a primary position and one or more alternate or secondary firing positions. Each position is at least 500 meters away from the previous position. The battery or platoon fires a mission of 3 to 4 minutes duration and then moves to a secondary position. This technique is necessary during a long offensive preparation or in the defense when forward or rearward movement is limited.

Figure 7-6 is an example of a howitzer battery deployment in standard formation. The battery often forms a straight line with equal intervals between guns. This pattern of deployment reduces emplacement/displacement time. It also simplifies the computation procedures required for battery fire missions. The reduced computation and mission time enable batteries to complete missions and relocate more quickly. This lessens their exposure to enemy fire and compensates for the vulnerability inherent in the formation. The senior officer of the battery operates the battery FDC which is usually in the center of the formation about 100 to 200 meters behind the line of artillery weapons.

OPFOR artillery can also use formations that vary the interval between guns and disperse the guns in depth with the aid of electronic field artillery computers. Figures 7-7 and 7-8 give some examples of the variants a battery might use. Even with computers, batteries may retain the linear formation for speed and simplicity. The OPFOR's goal is to reduce the time that a firing battery remains in position after firing the first round. Given the tempo of combat, artillerymen must now deliver effective fire from emergency positions without firing a registration. Under these conditions and with redundant artillery assets, the linear deployment retains its utility and attractiveness to artillery commanders.

Battery firing positions consist of two firing platoons of three guns each. The platoons may be a few hundred meters apart for greater survivability. Each platoon has a platoon headquarters and three gun sections. The platoon leader of the first firing platoon is the battery senior officer. The battery commander normally colocates his COP with the COP of the supported unit commander.
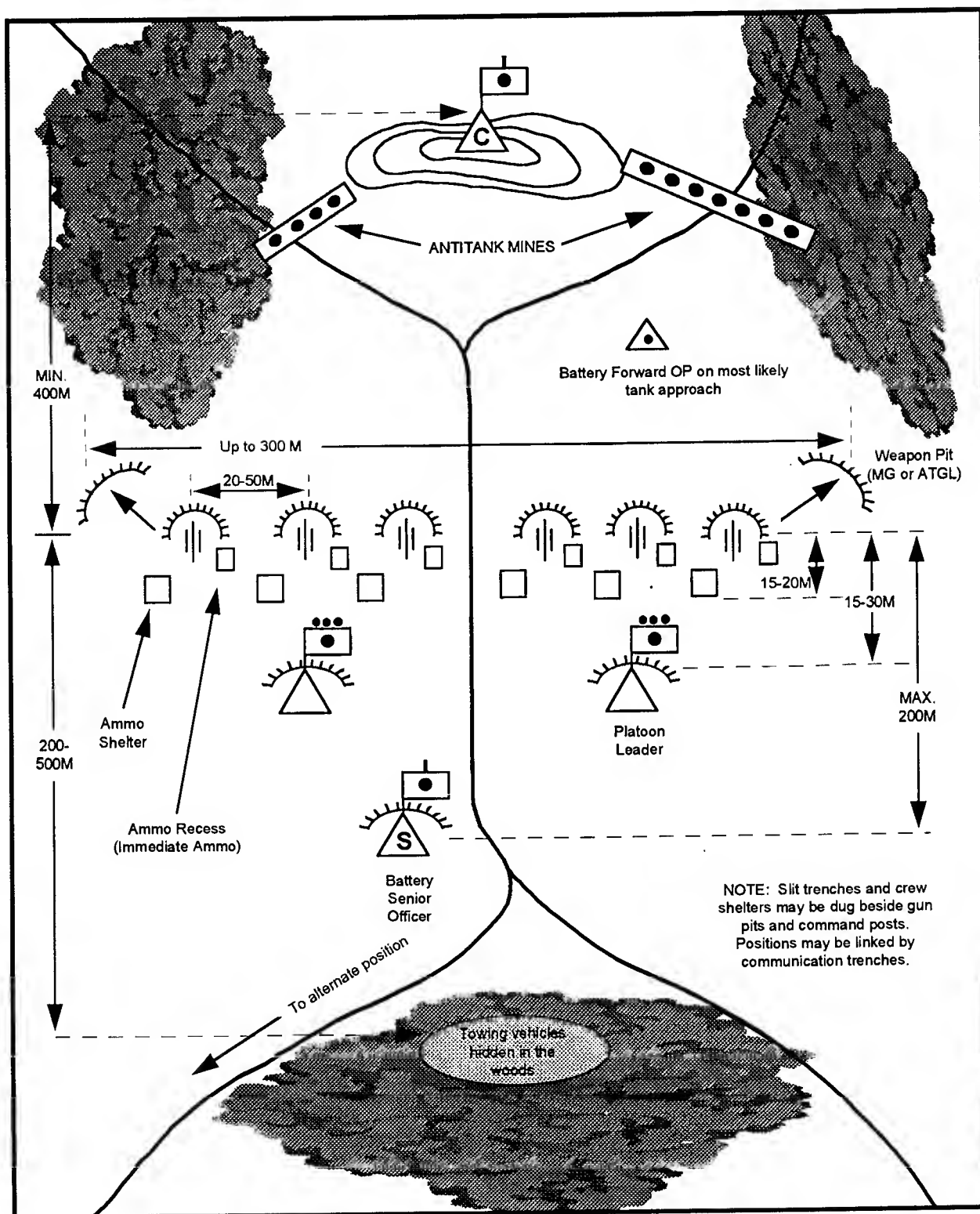
Figure 7-6. Howitzer battery deployment (standard formation).
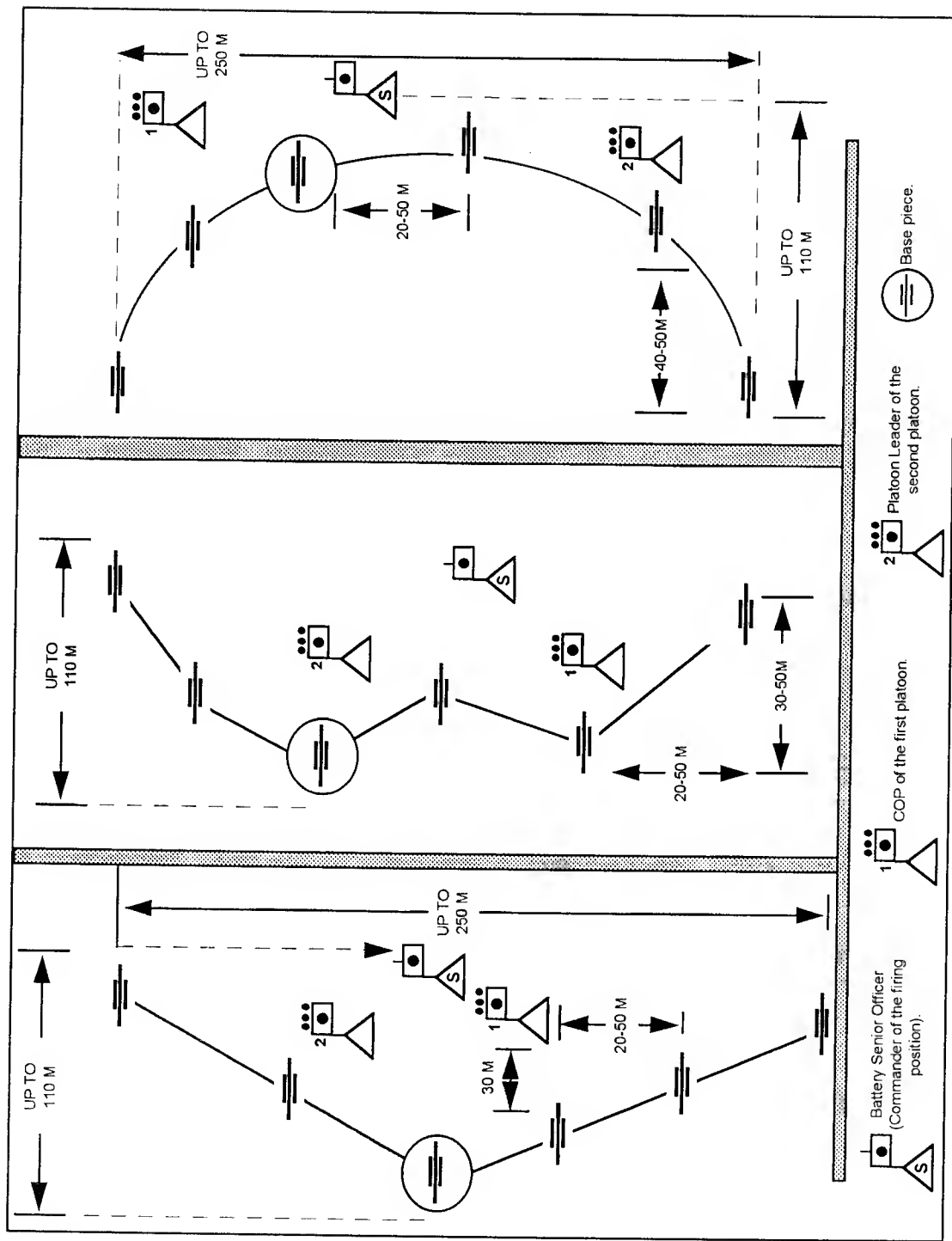
Figure 7-7 Deployment of a howitzer battery (variants).

7-18
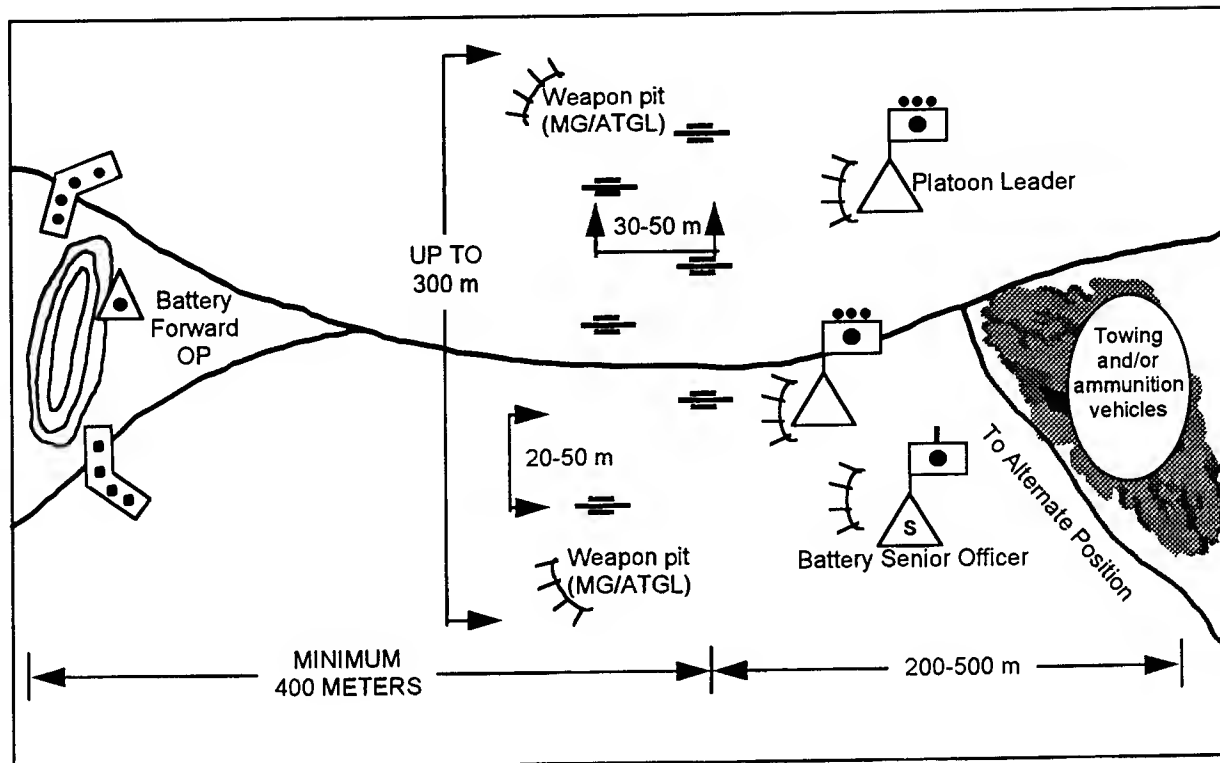
Figure 7-8. Variant of artillery battery firing position.

Multiple Rocket Launchers

The multiple rocket launcher (MRL) places heavy fire on important targets at decisive moments in a battle. The OPFOR also employs MRLs in roving fire support missions and counterattacks. Multiple rocket launcher batteries move forward 1 to 5 km from their camouflaged hide positions to occupy firing positions areas to support the battle. The launchers usually remain loaded, and one or more ammunition trucks accompany each one to these firing position areas. To evade counterbattery fire, MRLs normally move to either a camouflaged hide position or to a new firing position area immediately after firing. Figure 7-9 illustrates a typical MRL battery deployment.

CONDUCT OF FIRE

To achieve surprise and to increase effectiveness of fires, OPFOR artillery tries to be short but violent in the offense and more prolonged in the defense. The fires delivered are massive and concentrated on critical points in the offense and more dispersed, but still concentrated on the enemy, in the defense. This requires not only a local numerical superiority in artillery pieces but also rapid fire, long range, and mobility. Above all, the OPFOR stresses the importance of thoroughly integrated fire and maneuver plans.
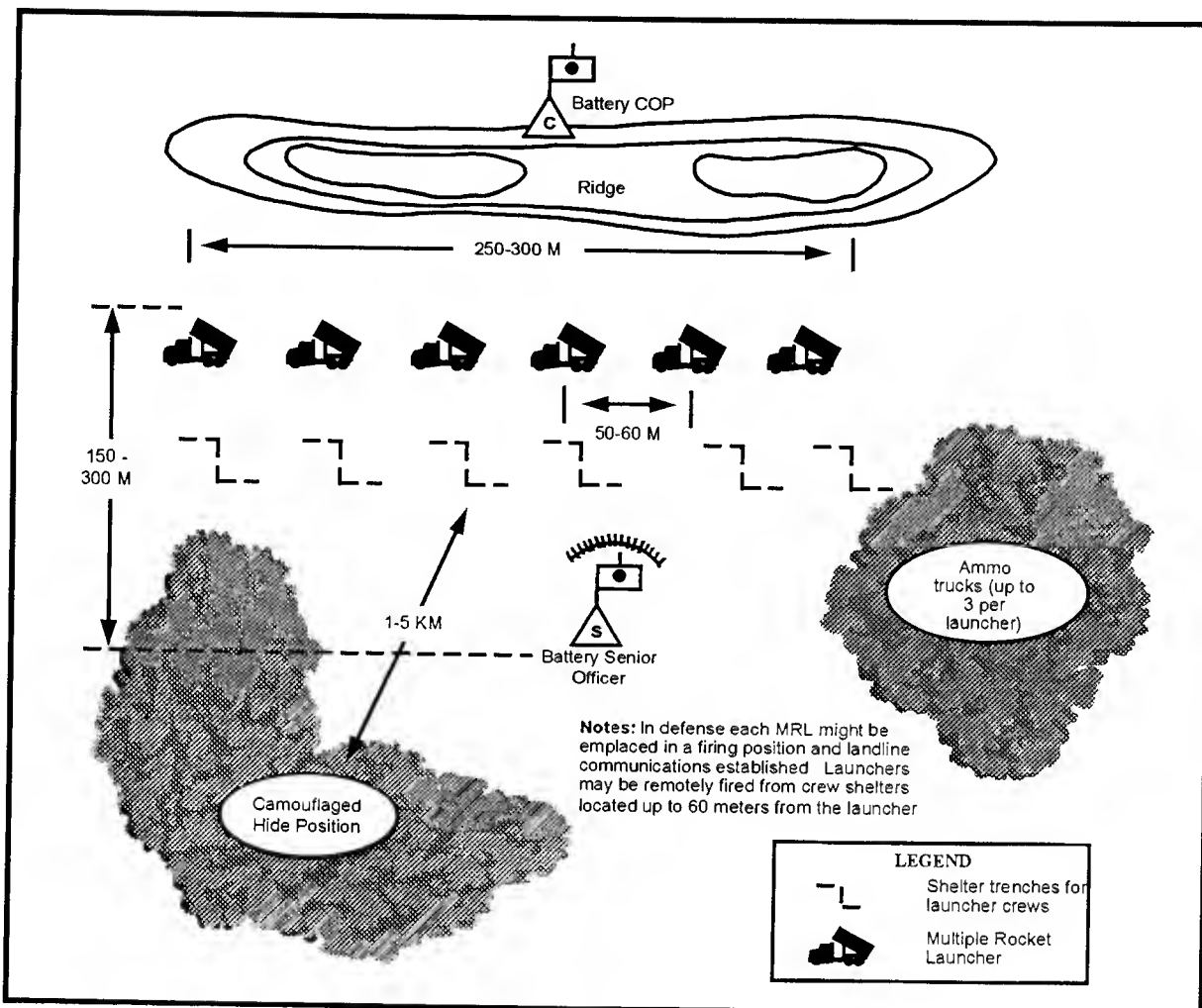
Figure 7-9. Multiple rocket launcher battery deployment.

The artillery battalions of brigades provides the flexibility and responsiveness required in a fluid combat situation. The OPFOR seeks to achieve the densities of fire that it believes necessary without sacrificing the mobility that artillery units need to survive and to perform their mission on the modern battlefield.

Firing Data

There are four individuals responsible for the preparation of firing data:
- The battery commander.
- The computer located in the COP.
- The computer located in the FDC at the firing position.
- The battalion chief of staff.

The battalion chief of staff computes the firing data as does the computer (a staff member, with or without an electronic computer) in the firing position. The senior officer in the firing battery relays the data to the gun platoons, and the gunners set the data on the gun in preparation to fire. The battery commander and the computer in the COP also solve the gunnery problem, providing a separate check on the data supplied by the firing battery computer. If for some reason the data

from the COP is ready before that of the firing positions, the battery commander transmits his data directly to the firing position.

If a difference exists between the firing data supplied by the two computers, the battery commander decides which to fire. This system demands that the battery commander be as proficient in computing gunnery problems as the computers. The OPFOR feels the independent computation of each gunnery problem by four different individuals significantly reduces the chances for a large error. This technique also ensures that a fire direction system is readily available if either the fire direction capability at the COP or the firing position is destroyed or suppressed.

When the artillery battalion controls the conduct of fire, it conducts the observation, computation, and firing similar to battery level. The battalion commander is at the battalion COP near the COP of the supported commander. Target acquisition and fire direction computation personnel assist him in acquiring targets, computing fire missions, and adjusting fire. Normally, the battalion chief of staff is in charge of the battalion firing position and the battalion FDC. Depending on the type of mission, battalion dispersion, and time available, battalion fire direction personnel may compute the gunnery problem for the entire battalion or run check computations while each battery computes its own data. The battalion commander gives the order to fire. He can require each battery commander to adjust fire for his own unit by weapon or by battery salvos.

Forward ground or air observation posts supplement battery and battalion COPs. Observation teams can locate forward in armored vehicles. Forward and air observers transmit target data to the battalion chief of staff, at the battalion FDC, for computation.

The OPFOR also integrates electronic computers into its field artillery battalions to exploit this new capability for firing procedures. The battalion probably still has centralized control of fire mission computation and fire control. It can give battery fire direction personnel fully computed data that is ready to pass to the guns. Centralizing electronic computation at battalion level is consistent with establishing the battalion as the basic firing unit in OPFOR artillery. The battalion and battery may run check computations manually on a routine or random basis.

Reaction Time

Electronic fire direction computers enable fire direction personnel to make numerous time-consuming corrections in elevation and deflection more quickly. They can do this for each firing platoon and possibly for each weapon during frequent moves. Figure 7-10 gives the average reaction times from receipt of fire orders to first rounds on the ground (on preplanned targets).

Unit	Time (in minutes)
Mortar battery	1 to 1.5
Artillery battalion	2 to 3
MRL battery	4
BrAG	4
DAG/MDAG	5

Figure 7-10. Reaction times.

Movement Time

Periodic or frequent movement of OPFOR artillery units during combat is necessary. Figure 7-11 illustrates the time allowed for displacing, moving, and emplacing for various artillery unit levels.

METHODS OF FIRE

The OPFOR uses various types of fires on the enemy. The methods of fire it employs can have different purposes in the offense and defense, and it can also conduct different types of fire for both. An OPFOR fire planner selects methods based upon desired coverage, effects, and fire density. The following section defines types and methods of fire the OPFOR employs.

Rapid Fire

Rapid fire is a method to conduct artillery fire by firing the weapon as quickly as possible. The weapon does not exceed its maximum rate of fire or sacrifice accuracy. When the commander orders rapid fire, each individual weapon crew begins to fire independently when ready.

Systematic Fire

Systematic fire is a method that fires every round, or salvo, on command at a set interval. The OPFOR uses this method for firing on observed targets during registration or when the unit is firing a demolition mission. The OPFOR also uses systematic fire against unobserved targets under the following circumstances:

- In the course of fire assaults of a given duration.
- During controlling fire.
- During harassing fire, usually alternating with rapid fire.

The tempo of systematic fire against observed targets depends on the capabilities and equipment of the observer. The time allotted for the expenditure of an amount of ammunition determines the tempo of fire against an unobserved target. The tempo of systematic fire is constant during a fire assault, but harassing fire may have an intermittent tempo. A single weapon, a firing platoon, or an entire battery may fire systematic fire. On receiving the mission, the firing unit also receives a rate of fire and an ammunition expenditure requirement.

Fire Unit	Evacuation of Firing Position		Movement (per km)*		Occupation of Firing Position	
	Day	Night	Day	Night	Day	Night
122-mm Towed Howitzer Btry	5-7	9	3	3-5	10-12	18
122-mm Towed Howitzer Bn	11	14	3	3-5	23	32
152-mm Towed Gun-Howitzer Btry	10	13	3	3-5	12	18
152-mm Towed Gun-Howitzer Bn	11	14	3	3-5	23	32
122-mm MRL Btry	3-5	6.5	3	3-5	10-12	18
122-mm MRL Bn	7	9	3	3-5	23	32
120-mm Mortar Btry	5.5	8	2.5	3	12	18
* Based on average movement rate of about 20 km/hr (day) or 15 km/hr (night) for towed howitzers, gun-howitzers, and MRLs.						

Figure 7-11. Time (in minutes) required for artillery to change positions.

Counterbattery Fire

Counterbattery fire accomplishes the neutralization and/or annihilation of enemy artillery batteries. Combat with enemy artillery is one of artillery's most important missions. It enables the OPFOR to achieve fire superiority on the battlefield. Combat with enemy artillery now requires more than counterbattery fire. It requires the destruction of the enemy command and control centers as well as his artillery. To be effective, it also requires the cooperation of the other combat arms and combat aviation.

Fire with Direct Aiming

This type of fire is often confused with "direct fire." The gunner of the artillery weapon can aim the piece using direct visual contact with the target. An artillery gunner who can sight directly on the target would usually engage it with direct fire, if possible. Because of the target's range or characteristics of the weapon, he may instead engage it with indirect fire. A mortar crew, for example, could sight directly on a target but has to engage it with indirect fire.

FIRING NORMS

The OPFOR tries to solve battlefield problems through the use of mathematical formulas, and fire support is no exception. Study of past wars and of improvements in weapon systems has led the OPFOR to establish **norms** for the numbers of rounds required to achieve different effects on targets. When ordered to inflict a specific level of damage on a target, the artillery commander refers to his tables to find out how much ammunition to expend. The levels of destruction that may be ordered are summarized below.

OPFOR fire planners establish firing norms for--
- Target damage criteria.
- Ammunition expenditure.
- Area coverage expected.
- Density of fire over time.

When establishing these norms, planners consider several variables. The norms change as any one or more of the variables change. These variables include--
- Type of target; for example, equipment or personnel, deliberate or hasty defensive positions, hard- or soft-skinned vehicles, point or area, and disposition.
- Type, caliber, and number of weapons engaging the target.
- Range to the target.
- Whether the target is under direct observation during the artillery attack.
- Types of ammunition available.
- Time available to prepare for firing.

Target Damage Criteria

Target damage is the effect of fires on a given military target. It results in total, partial, or temporary loss of the target's combat effectiveness. The OPFOR categories of target damage are: annihilation, demolition, neutralization, and harassment.

Annihilation

Annihilation fires make unobserved targets combat-ineffective. For a point target such as an ATGM launcher, the OPFOR must expend enough rounds to assure a 70 to 90 percent probability of kill. For area targets such as platoon strongpoints or artillery assets, artillery must fire enough rounds to destroy 50 to 60 percent of the targets within the group. These fires result in the group ceasing to exist as a fighting force.

Demolition

Demolition is a subset of annihilation. The OPFOR uses the term in reference to destruction of engineer works (bridges, fortifications, roads, etc.). Demolition requires enough rounds to make such material objects unfit for further use.

Neutralization

Neutralization fire inflicts enough losses on a target to--
- Cause it to lose its combat effectiveness temporarily.
- Restrict or prohibit its maneuver.
- Disrupt its ability to command and control or communicate.

To achieve neutralization, the OPFOR must deliver enough rounds to destroy 30 percent of a group of targets.

Harassment

The OPFOR uses a limited number of artillery pieces and ammunition within a prescribed time to deliver harassment fires. These fires put psychological pressure on enemy personnel in concentrated defensive areas, command posts, and rear installations. Successful harassment fire inhibits maneuver, lowers morale, and interrupts rest. All these effects weaken enemy combat readiness.

Ammunition Expenditure

Figure 7-12 is a general table of ammunition expenditure norms. It does not consider time. These norms can apply to any of the methods of fire described. These norms are for unobserved targets at a range of **10 km or less** from the artillery. The data assumes batteries that have made deliberate occupation of their firing positions to fire the rounds and are laid based on survey data. It also assumes that they fire with meteorological data that is no more than 3 hours old.

The ammunition expenditure rate decreases by 25 percent when the artillery uses observed fire or adjusts from a known point. This expenditure increases by ten percent for each additional kilometer at ranges beyond 10 km. (See Figure 7-13.) The expenditure for MRLs does not increase with this longer range. Multiplication of the ammunition required for neutralization by three or four determines annihilation ammunition expenditures. The number of rounds required for neutralization times two or three gives the expenditures for targets in the open.

| TARGET | REQUIRED EFFECT | CALIBER IN MILLIMETERS | | | | | | | | | | | | | |
| | | GUNS AND HOWITZERS | | | | | | | MORTARS | | | | MRLs | | |
		76	85	100	122	130	152	203	82	120	160	240	122*	122**	220
SSM Launcher	Target annihilation	800	720	540	300	280	200	70			140	60	510	360	200
Battery (platoon) of armored self-propelled artillery (mortars)	Target neutralization	1000	900	720	450	360	270	120		450	220	120	560	400	240
Battery (platoon) of unarmored self-propelled or dug-in towed artillery (mortars)	Target neutralization	540	480	360	240	220	180	100	400	240	160	100	400	320	180
Battery (platoon) of towed artillery in the open	Target neutralization	250	220	150	90	80	60	30	180	90	40	20	150	120	60
SAM Battery	Target neutralization	250	240	200	150	150	100	60						200	100
Signal and radar vans or radar control point in the open	Target neutralization	420	360	280	180	180	120	60	350	180	80	40	300	240	120
Dug-in troops and weapons in prepared defense strongpoint positions	Neutralization of 1 hectare of target area	480	450	320	200	200	150	60		200	100	50	320	240	100
Dug-in troops and weapons, tanks, infantry fighting vehicles, and APC's in hastily prepared defense positions, and assembly areas	Neutralization of 1 hectare of target area	400	350	250	150	150	110	45	300	140	85	45	240	180	80
Troops and weapons in assembly area in the open	Neutralization of 1 hectare of target area	50	45	30	20	20	15	5	35	10	8	4	10	8	5
Command post in dug-out shelter or other overhead cover	Neutralization of 1 hectare of target area	480	450	320	200	200	150	60		200	100	50	320	240	100
Command post in the open (or mounted in vehicle)	Neutralization of 1 hectare of target area	120	100	80	50	50	40	15		25	20	10	30	20	15
ATGM, antitank gun or other individual target in the open	Target neutralization	250	240	180	140	140	100	90	240	140	80	35			

* Short rocket fired by single-tube, tripod-mounted launcher.
** Long rocket fired by MRL.

Figure 7-12. Ammunition expenditure norms (ranges up to 10 km).

At ranges of 10 km or less, the table Figure 7-12 determines the coverage. To compute the ammunition expenditure on unobserved targets at distances greater than 10 km, the OPFOR use the following formula:

$$N_d = \frac{D \, N_{10}}{10}$$

WHERE:

N_d = The number of rounds of ammunition expended per hectare of target area at a given distance beyond 10 km.

D = The actual distance to be fired, rounded off to the nearest km.

N_{10} = The number of rounds to be fired per hectare of area per norms established for the same weapon system at a distance of 10 km or less.

Figure 7-13. Ammunition expenditure norms (for ranges greater than 10 km).

Area Coverage

The OPFOR follows specific guidelines to achieve the optimum coverage in a battery or battalion concentration. It calculates fire coverage in terms of the number of rounds per hectare (See Figure 7-14). Each weapon should be able to neutralize an area, given in hectares, the size of which depends on the time allotted and the type of target. Based on expenditure norms, the OPFOR has established minimum target dimensions for firing batteries. The minimum target size varies with range to target and weapon dispersion factors. Figure 7-15 shows an example for a battery of 122-mm howitzers. If a target is smaller that the minimum, the battery attacks it with the same amount of ammunition as required for the minimum-size target.

A HECTARE IS 10,000 SQUARE METERS, THE EQUIVALENT OF 2.47 ACRES.

1 HECTARE — 100 m
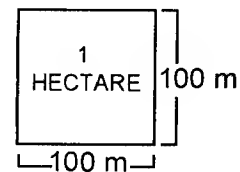
└─100 m─┘

Figure 7-14. Calculation of fire coverage.

Neutralization by	Range up to 6 km	Range over 6 km
122-mm Howitzer battery	100 m X 150 m (1.5 hectares)	100 m X 200 m (2 hectares)

Figure 7-15. Minimum target size.

The OPFOR may not always fire all the ammunition required to neutralize a target every time. This can occur because of time, target importance, and available ammunition. Also, more than one artillery unit may engage the target. These conditions affect the percentage of the neutralization norm which artillery units fire. The ammunition required also depends on whether it is possible to observed the target.

Target Unobserved (Corrections Not Possible)

Sometimes the OPs cannot see the targets because of battlefield conditions. Figure 7-16 illustrates a method for the distribution of rounds on an unobserved target area if corrections are impossible.
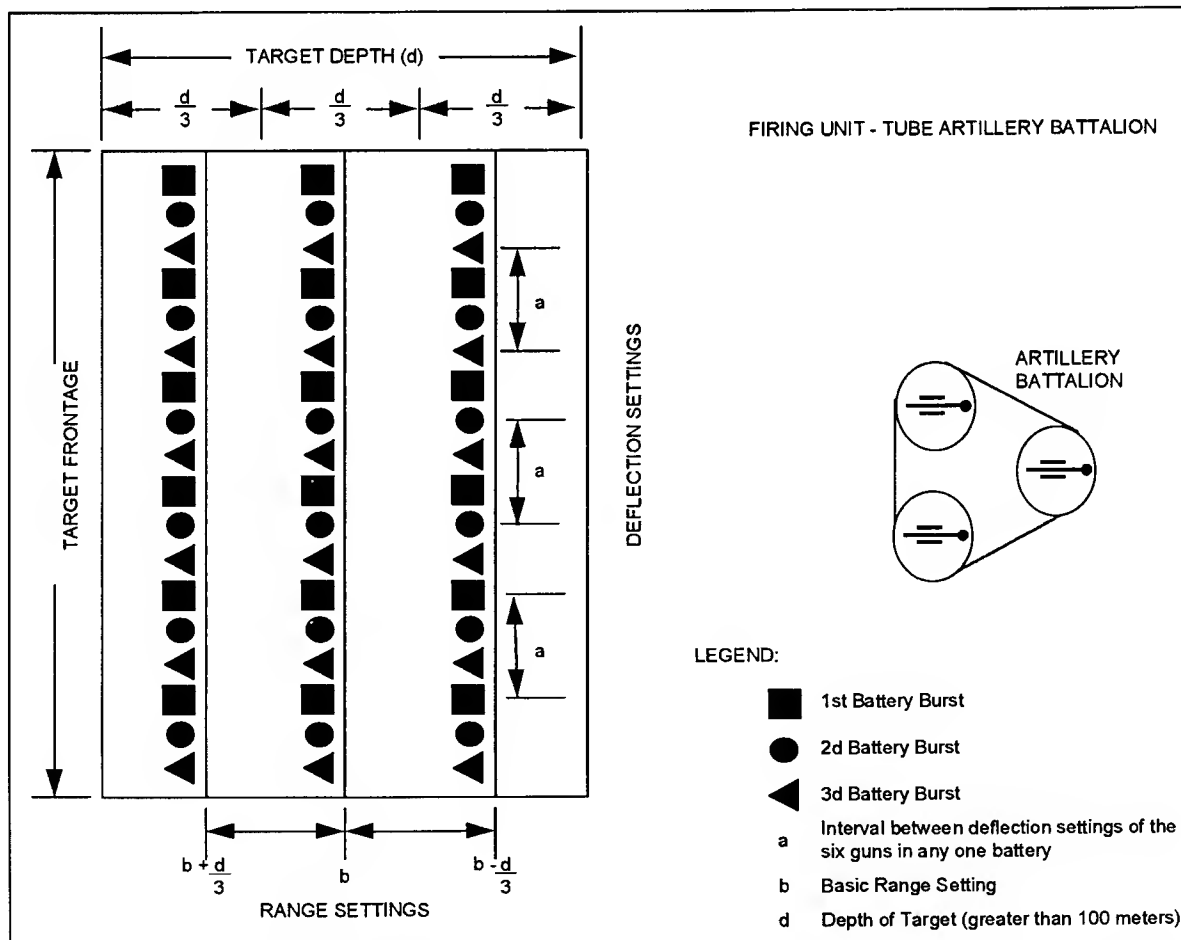
Figure 7-16. Distribution of rounds on an unobserved target area.

Range settings. If the target is 100 meters deep or less, all tubes fire on a single elevation setting. If the target is deeper than 100 meters, all tubes fire on three different elevation settings. The interval between settings is equal to one-third of the depth of the target.

Deflection settings. Each battery fires on a single deflection setting that ensures coverage of the entire frontage of the battalion's target. As a result, each of the three batteries in the battalion superimposes its fire on that of the other two.

Target Observed (Fire Adjusted)

When artillery can adjust on an observed target, the battalion target area can have subdivisions of three roughly equal target groupings. Two batteries have target groups side by side across the target's frontage. The third battery attacks targets in the depth of the target area. Figure 7-17 shows battery target groupings firing on an observed target.

Range settings. Each battery fires on a single elevation setting if the depth of the target is 100 meters or less. If the depth of the target exceeds 100 meters, each battery fires on three different range settings. The interval between lines of concentration is equal to one-third of the depth of the target.

Deflection settings. If target coverage per weapon is 25 meters or less, each battery fires all tubes on a single deflection setting. If the target coverage (sheaf) per weapon is 25 to 50 meters, then the battery fires on two different deflection settings. Mortar batteries always fire on a single deflection setting. Dividing the target frontage by the number of weapons in the firing battery yields the target coverage per piece.

Density of Fire

OPFOR doctrine stresses that it must not only deliver the required numbers of rounds, but that it should be do so quickly as possible. This maximizes surprise and prevents mobile targets from escaping before the mission is complete. This also enables batteries to make minor adjustments to their firing positions to escape counterbattery fires. For these reasons, fire missions now consist overwhelmingly of short, intense concentrations, with lengthy barrages being largely a thing of the past.

Time

Until recently, the time required for mission accomplishment was not a major consideration in OPFOR artillery planning. It was only a factor in coordination with supported maneuver units. The OPFOR now recognizes the need to move quickly after firing artillery missions. It has incorporated this into its training and maneuvers. It wants to reduce the time required for fire missions. The following are the most important reasons for this:

- **Target mobility.** Targets on today's battlefield are often armored and highly mobile. They can relocate within minutes from the time they come under fire.
- **Increased effectiveness of fire.** The same ammunition allocation is more effective against a target when units fire the entire allocation of rounds within short period of time. This is especially true for the initial fire assault of a long fire preparation and for short, intense fire preparations.
- **Increased survivability.** The OPFOR believes that enemy target acquisition capabilities have improved considerably. This allows enemy artillery to acquire and fire on OPFOR artillery batteries within 4 minutes from the time OPFOR fires its first round.
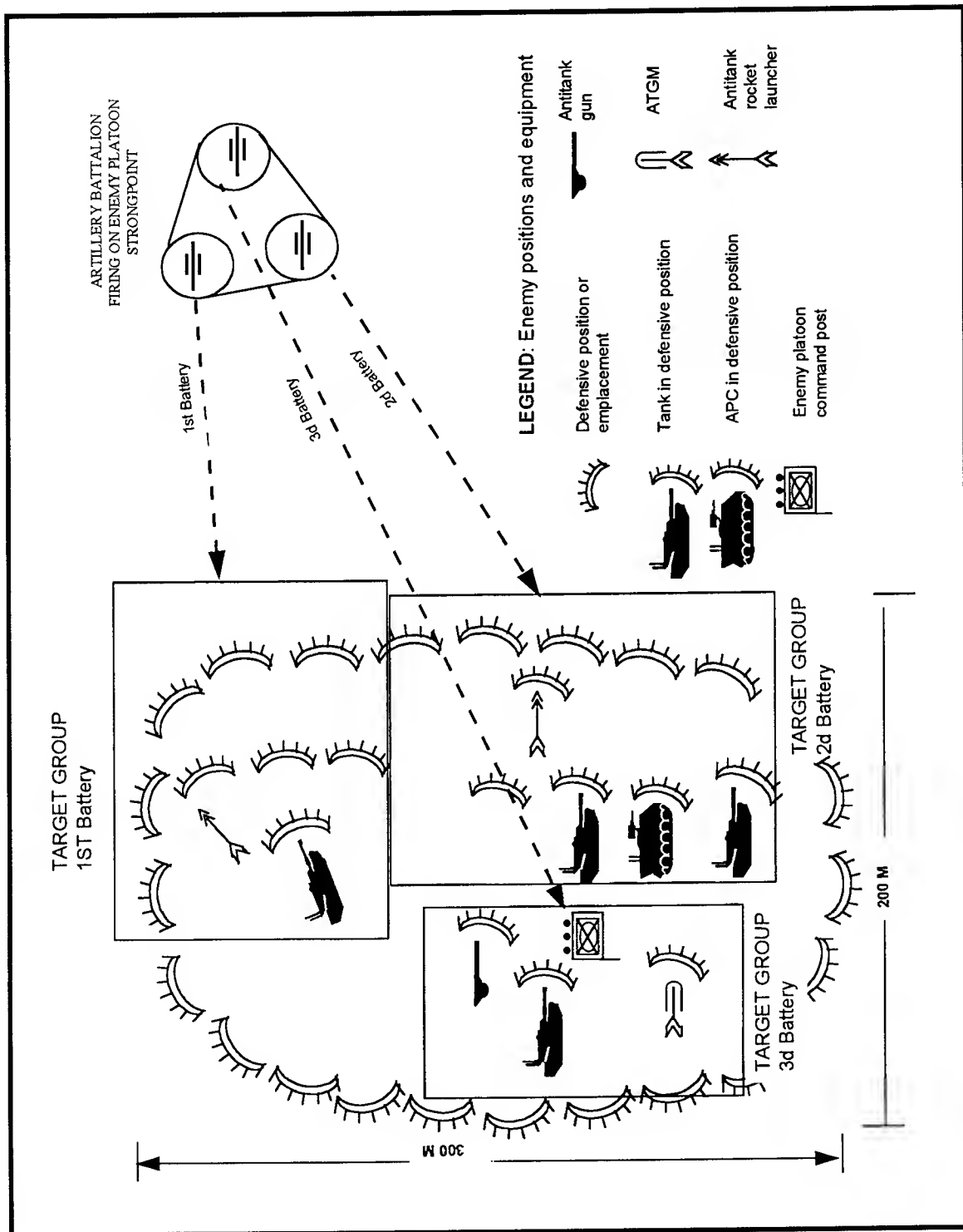
Figure 7-17. Battery target groupings assignment for an observed target (example)

7-29

As a result of this perception of the threat, OPFOR artillery planners are trying to try to reduce mission times to four minutes. This goal is especially important for the accompaniment phase. However, in a large-scale attack, the preparation and support phases must often be longer. When the enemy is defending and the OPFOR has overwhelming fire superiority, it perceives its own vulnerability to enemy counterbattery fire to be greatly reduced.

SUPPORT IN OFFENSE

Artillery support in the offense should be continuous and concentrate on the axis of the main attack. Offensive artillery fires try to maintain uninterrupted support from the time attacking units begin their movement forward until they reach the attack objective or mission line. Concentration includes the tasking of all artillery support up to and during the commitment of the second echelon. Use of selected lines controls the shifting of fires, displacement of artillery units, and changes in command relationships between artillery units and supported units.

In the **offense**, artillery support ensures the uninterrupted advance of ground forces by--

- Blasting gaps in enemy defenses.
- Disrupting and destroying enemy formations in the depth of his defense.
- Stopping and destroying enemy counterattacks.
- Suppressing or destroying enemy artillery attempting to stop the advance.

Zones

The OPFOR distinguishes between close- and long-range fire support zones. The **close-range fire support zone** extends as far as the range of the attacker's direct fire weapons, approximately 3 km into the enemy's defenses. The close-range fire support battle must destroy forward-defending troops and their supporting weapons.

As the OPFOR modernizes fire support assets, the depth of the **long-range fire support zone** continues to increase. At division and below, the long-range fire support zone extends out to the limit of a division's subsequent mission. Today, critical enemy targets such as high-precision, deep-strike systems deep in the enemy's rear area make domination of the long-range fire support battle very important.

Phases of Fire Support (Offense)

The goal of artillery support in the offense is to provide continuous supporting artillery fires through the depth of the enemy defense. The duration of these fires can vary with circumstances. There are four phases in the fire support of the offense (See Figure 7-18). It may be necessary to repeat each phase to support the commitment of subsequent echelons.

- **Phase I**: Fire support for the movement forward.
- **Phase II**: Fire preparation for the attack.
- **Phase III**: Fire support of the attack.
- **Phase IV**: Fire accompaniment.

Figure 7-19 illustrates typical actions of an artillery battalion in each of these phases.
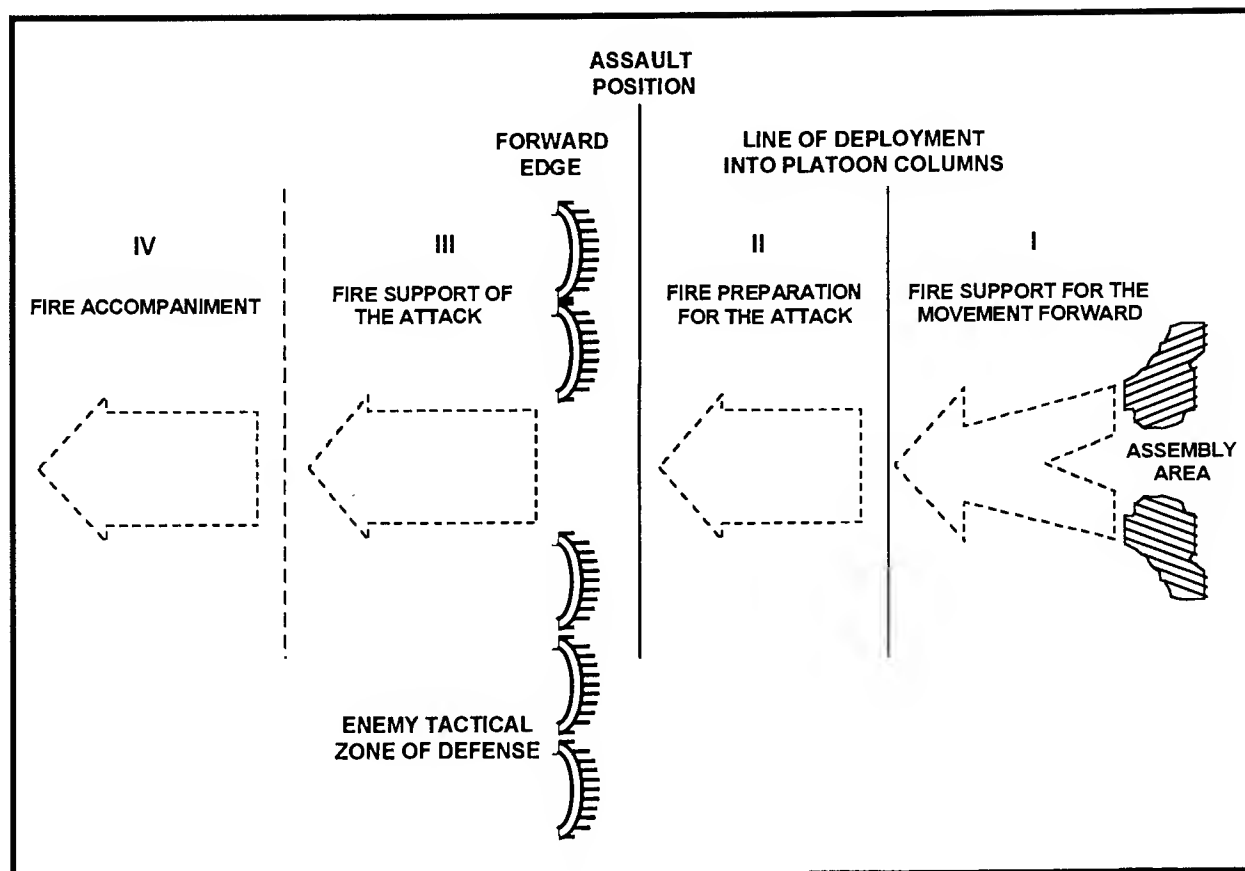
Figure 7-18. Phases of fire support.

Phase I: Fire Support for Movement Forward

Phase I applies to conventional support of any uncommitted force moving toward commitment against the enemy. This phase covers a unit's movement from the assembly area to the line of deployment into platoon columns. This phase may also cover a follow-on force's movement forward before commitment.

This phase targets enemy long-range weapons that might strike the supported unit while it is still a considerable distance from the forward edge of enemy defenses. These targets consist of enemy long-range artillery

and SSMs. Targets can also include aircraft on airfields and combat helicopters. The OPFOR uses aviation, SSMs, long-range guns, and MRLs to annihilate or neutralize deep targets.

This phase may begin more than an hour before the attacking force reaches the enemy's forward edge of defense. The aim is to protect the advancing columns by annihilating or harassing enemy systems that could interfere. Fires for this phase are likely to come from temporary firing positions, with the artillery shifting to its main positions for the preparatory phase. It ends when the maneuver units are ready to deploy from company columns into platoon columns.

Actions of Supported Maneuver Units	Phase of Artillery Fire	Battalion Fire Missions
Departure from brigade assembly area; H-2:05 deployment into battalion columns	**Support for the movement forward** H-2:05 to H-0:57 (duration 1 hour 8 minutes)	H-2:05 to H-0:57 Neutralize enemy long-range fire support assets capable of striking the brigade as it moves forward
Deployment into company columns H-1:42		
Deployment into platoon columns (motorized infantry dismounts) H-1:28		
Continued movement in platoon columns	**Preparation for the attack** H-0:57 to H-0:07 (duration 50 minutes)	H-0:57 to H-0:42 Neutralize personnel and weapons in enemy first-echelon battalions
		H-0:42 to H-0:32 Fire by direct aiming only
		H-0:32 to H-0:21 Neutralize personnel and weapons in the depth of enemy brigade
Arrival at assault positions in platoon columns H-0:21		H-0:21 to H-0:07 Annihilate personnel and weapons in first-echelon battalions
Departure from assault positions in battle formation (platoons deployed laterally) H-0:07		
Movement to the attack; at H-hour, attack enemy on forward edge and penetrate or bypass enemy first-echelon companies	**Support of the attack** H-0:07 to H+1:45 (duration 1 hour 52 minutes)	H-0:07 to H+0:50 Participates in double fire concentration on: • Line 1 (3 minutes) • Line 2 (17 minutes) • Line 3 (20 minutes)
Development of the attack between enemy first-echelon companies of enemy battalions; repel counterattack by enemy brigade reserve		H+0:50 to H+1:20 Support attack with concentrated fire on individual targets; support repelling of enemy counterattack with barrage and fire concentration
First-echelon battalions penetrate through rear of enemy brigade reserve		H+1:20 to H+1:45 Support attack in depth of enemy division reserve with single fire concentration on: • Line 1 (17 minutes) • Line 2 (8 minutes)
Commitment of second-echelon battalion	**Accompaniment of the attack**	Ready with a 12-minute fire concentration to neutralize enemy personnel and weapons
Repel counterattack by enemy division reserve		Ready to annihilate advancing enemy reserves with fire concentrations and defensive fire

Figure 7-19. Fire missions of artillery battalion in BrAG in attack from positions in direct contact.

Phase II: Fire Preparation for the Attack

Phase II, fire preparation, can apply to the attack or the counterattack. It may also precede the commitment of second-echelon or reserve forces. The artillery preparation should neutralize and/or annihilate a defending enemy with organized, thoroughly planned, and massed fires that deny the enemy the opportunity to organize resistance. The fire preparation should annihilate and neutralize enemy weapon systems, command and control elements, and troops. This may take place simultaneously through the entire depth of the defending first-echelon brigades' positions and, against selected targets, through the entire tactical and immediate operational depth of the enemy's defenses. (Tactical and immediate operational depths include the enemy's division and corps rear boundaries, respectively.) The OPFOR strives to achieve fire superiority early, in order to deny any real opposition by the enemy.

High-priority targets include the following:
- Weapons capable of chemical (or nuclear) delivery.
- Artillery, tactical ballistic missiles, and mortars.
- Strongpoints (with highest priority to forward-most units).
- Command posts, air defense, antitank weapons, radars, and other electronic assets.

The duration and conduct of the preparation reflect--
- The overall attack plan.
- The nature of the enemy's defenses.
- The type and density of fire support means being used for the preparation.
- The required level of destruction.

In an attack from the march, the length of the preparation depends on the time required for first-echelon companies to deploy into battle formation.

Targets for the preparation go to missile and rocket forces (if available), artillery, mortars, and aviation according to the type of target, its size, degree of hardness, mobility, and depth in the enemy's defenses. Fires of tanks and antitank artillery may be used during these preparations.

If limited ammunition is available, the maneuver commander may have to accept a lower level of damage. If time is available, the OPFOR positions on the ground the ammunition planned for use during the preparation. It keeps ammunition loaded on battery and battalion (and possibly brigade) transports for later use.

The preparation covers the period when maneuver companies are in prebattle formations platoon columns. It ends when the attacking force goes into its final battle formation, usually within 1,000 meters of enemy defenses. The OPFOR may repeat this fire against well-fortified, deeply-echeloned defenses. Because of the mobility of potential targets and the threat of enemy counterbattery fire, the OPFOR strives to increase and maintain a high density of fire. It tries to reduce the length of this phase by adding more artillery, with special emphasis on MRL units, to the force structure. The goal is to achieve the greatest firing density possible, within the time limitations of the preparation. In the last 5 minutes of Phase II and the beginning of Phase III, emphasis shifts to artillery and mortar targets, and continuous fire.

Phase III: Fire Support of the Attack

Phase III begins immediately following the preparatory phase. It begins when OPFOR first-echelon companies deploy into battle formation. It continues at least until the supported maneuver unit achieves its immediate mission. For OPFOR brigades, that normally equates to the rear of the enemy's first-echelon brigades. Some of the artillery may execute the rolling barrage. Other units may use successive fire concentrations to neutralize or destroy the following:

- Strongpoints.
- Antitank weapons.
- Command posts.

As the supported unit advances, the artillery delivers phase III fires on targets on sequential lines moving progressively deeper into the enemy's defensive positions. These lines are directly in front of, and on the flanks of, attacking OPFOR troops. Emphasis is on the continuity of support, ensuring the fire of the artillery and the advance of the maneuver units do not get out of phase. Fires shift from line to line by order of the supported unit commander.

This phase hastens the forward movement of assaulting units. It also should prevents the enemy from restoring fire, command and control, and observation systems disrupted during the preparation. Fires continue to neutralize enemy troop activity and weapon systems.

Phase IV: Fire Accompaniment

Fire accompaniment is the fourth and final phase. The accompaniment begins upon penetration or bypassing of first-echelon enemy brigades and continues until attacking units have accomplished their subsequent mission. It includes artillery and air strikes against troops and weapon systems opposing the at-tacker's advance as well as against enemy reserves deep in the rear. Artillery units provide on-call fires for maneuver units exploiting successful penetrations. Accompanying artillery fires on newly appearing targets or previously fired targets that still offer resistance. There is an increased use of direct artillery fire during this phase.

During this phase, assigned or attached artillery units displace with the units they support. They fire on newly located targets or targets that have survived the preparation and support phases. Artillery groups and combat aviation units coordinate mutually supporting fires with each other and with the supported maneuver unit. They support the commitment of the attacker's second-echelon forces to ensure a high rate of advance. Fires must keep the enemy from using his reserves for counterattacks. If the enemy counterattacks, artillery fires on the counterattack force as it advances and deploys.

The initial fire support plan for the offensive operation calls for the fire and maneuver of artillery units during the accompaniment. The accompaniment portion of the plan is continually updated during the attack. Artillery accompaniment requires close coordination with aviation elements and other forces and means.

Senior commanders give artillery orders and amendments to orders while moving. Units initially engaging the enemy conduct detailed fire planning. As the battle develops and additional artillery deploys, the artillery staff refines the fire plan. It also enlarges it to provide maximum fire at critical points. The artillery commander positions accompanying artillery to facilitate prompt fires for each maneuver unit as the maneuver commander commits it. Supporting artillery displaces to be in the best location to support the battles with fire.

Maneuver by Fire

Maneuver by fire occurs when a unit shifts fire from one target, or group of targets, to another without changing firing positions. This is a combined arms concept in which the artillery plays a critical role. Maneuver by fire masses fires on the most important enemy objectives and troop formations. Its goal is to destroy the enemy in a short period of time or to redistribute fires to destroy several targets simultaneously. The method also may shift the main combat effort from one axis to another. It can involve any of the following types of offensive fires.

Fire Against a Single Target

An artillery battery, platoon, or gun, can fire against a single target such as an enemy mortar, fighting vehicle, or ATGM launcher. The artillery element can conduct this action independently from an indirect firing position or by direct fire.

Fire Assault

Surprise and a high density of fire on the target characterize the offensive fire assault. It consists of several batteries or battalions firing against an individual target. Fire assaults are the major subelements of an artillery preparation for an attack. All, or at least the larger part of, the artillery of a division carries out these assaults simultaneously on a large group of targets. Fire assaults may annihilate or neutralize targets. Factors determining the number of fire assaults on a target are--

- The area or nature of the target.
- The number of rounds allocated for its annihilation or neutralization.
- The range to the target.
- The number of tubes available.
- The types of ammunition available.
- The time required for artillery to prepare and expend the rounds allocated.

The tactical situation and the maximum rate of fire of the weapons firing the mission determines the duration of the fire assault. A fire assault of a given duration typically begins with rapid fire of two to four rounds per minute per weapon. It continues with systematic fire at a rate that uses the allocated ammunition in the time allotted for the mission. To destroy a target in the shortest possible time, the OPFOR does not fix the duration of the assault. Artillery units conduct the mission at rapid fire until they expend the allocated ammunition.

Controlling Fire

OPFOR artillery directs controlling fire at an enemy target in the time intervals between fire assaults on the same target. Controlling fire denies the enemy the freedom to conduct combat activity and prevents escape before the next fire assault. The planner uses this method when the interval between fire assaults exceeds 15 minutes. A single battery usually conducts this fire at either a systematic rate of fire, rapid fire, or a combination of the two. This ensures a smooth transition for supporting fires.

Fire Concentration

Several batteries/battalions may simultaneously conduct a fire concentration against a common target. The dimensions of the fire concentration target area depend on the fire mission and the firepower of the artillery unit firing the mission. Batteries/battalions conduct fire concentrations with all weapons firing at once on the center of the target area. All weapons may fire on the same elevation and deflection settings, or some units may use different settings. This depends on factors such as target disposition and whether the target is "observed."

Massed Fire

OPFOR artillery masses fire against an enemy objective with all or most of a given unit's artillery, with the goal of destroying it in the shortest possible time. This massed fire can be one large fire concentration or several large fire concentrations fired simultaneously. Before conducting massed fire, the artillery battalion chief of staff designates target areas and assigns each firing unit an area. If the dimensions of the target area do not exceed 800 by 800 meters, all participating artillery units fire simultaneously on the center of the target area, applying the principles used for fire concentrations. If the target area is larger than 800 by 800 meters, the target has subdivisions of numbered targets or target sectors. The fire planners designate target or target sectors to the assigned artillery units to annihilate or neutralize with fire concentrations. To the extent possible, the artillery units fire the mission simultaneously. The most lethal massed fire is a "fire assault", with one or two artillery battalions firing the mission at rapid fire within a few minutes time. In order to achieve surprise, registration fires are usually avoided.

Successive Fire Concentrations

OPFOR artillery fires successive fire concentrations in the attack when the supported maneuver unit begins the final assault on enemy defensive positions. The artillery fires concentrations for the successive neutralization or annihilation of specific targets, or target groupings deployed to the front and on the flanks of attacking troops. Successive fire concentrations primarily support the offense, but can support counterattacks in the defense. Successive fire concentrations may be single or double.

In a **single** successive fire concentration, the artillery unit fires initially on the single line of targets closest to the attacking troops. It shifts the single fire concentration to progressively deeper lines or groups of enemy targets as the supported attacking troops advance. The principal weight of fire concentrates on neutralizing the enemy's forward defensive positions.

A **double** successive fire concentration requires two artillery units to fire simultaneously. The first unit fires on the line of targets closest to the supported attacking troops. The second unit fires on the next line of targets. The first unit then shifts its fires from the first line of concentration to the second line. The second unit shifts its fires from the second line to the third and so on. In a double successive fire concentration, every line of targets, except the first, receives fire twice.

The first line of concentration covers the defender's forward positions. Subsequent lines of concentration are 300 to 1,000 meters apart through the depth of the enemy's defenses. On each successive fire concentration, the fire planner assigns concentration sectors to every battalion or battery firing the mission. Attacking troops normally deploy into battle formation at the assault position. At that time, preparatory fires become supporting fires. The time required for troops to travel from here to the troop safety line is important, since it determines the duration of fire on the initial line of targets (concentrations).

The maneuver commander signals initiation of this fire when the ground assault begins. The supported maneuver commander gives a signal to shift fire to each subsequent line of concentration. The OPFOR can use fire support helicopters attacking beneath the trajectories of artillery rounds during these concentrations.

Rolling Barrage

In artillery support of the attack, some of the artillery may execute a rolling barrage. The rolling barrage is a continuous curtain of fire. It successively shifts from one phase line to another in front of attacking troops. Like successive fire concentration, it may fire against a single line or against two lines simultaneously. The rolling barrage differs from the successive fire concentration in that it assumes a uniform distribution of targets throughout the target area. It then shifts fire between uniformly spaced phase lines. (The successive fire concentration focuses on targets that require concentrated fires. The target location determines the intervals between lines.) The rolling barrage may have a fire concentration superimposed to ensure the destruction of the most important targets.

In the rolling barrage, phase lines have planned concentrations every 400 to 800 meters. The spacing depends on the density of targets in the target area. Planned intermediate phase lines lie every 100 to 200 meters. Artillery units fire on each phase line for at least 5 minutes at a rate of 4 to 6 rounds per 100 meters per minute. They fire on each intermediate line for 1 or 2 minutes at the same rate. A rolling barrage has battalion and battery sectors with standard widths.

The supported maneuver commander orders the fires to shift to support the advance. However, fires shift automatically from intermediate lines in accordance with a timed firing program.

The depth of a rolling barrage depends on the nature of the enemy's defenses, the attack plan, and the availability of artillery and ammunition. Normally, there is a rolling barrage through the depth of the supported maneuver unit's immediate mission. The rolling barrage requires a great deal of ammunition. It is not, therefore, the most likely method of offensive fire. A rolling barrage, however, may support a penetration of well-prepared defensive positions and forced water obstacle crossings.

Density Norms

The OPFOR plans to achieve certain density norms for artillery. These norms depend on the tactical situation. For example, the OPFOR wants to concentrate the fires of high numbers of tubes per kilometer of frontage to penetrate well-prepared enemy defenses. However, modern artillery and methods of fire control allow lower densities than previously experienced. Some **average guidelines** for desired densities are as follows:

- Attack of a well-prepared defense, on the main-attack axis: 60 to 100 tubes per kilometer of frontage.
- Attack on a hasty defense on the main-attack axis: 60 to 80 tubes per kilometer of frontage.
- Attack on a supporting axis: 40 tubes per kilometer of frontage.

These norms apply to al types of tube artillery (guns, howitzers, and mortars).

When the fires come from MRLs the number of systems required to achieve the required density can decrease by 50 to 75 percent. The required density of artillery fires can also decrease when direct air support is available.

SUPPORT IN DEFENSE

Defensive fires consist of massed fires, or fire strikes by all available assets against likely enemy avenues of approach and zones of continuous fire across the forward edge. Emphasis is on close coordination between artillery, rocket systems, and aerial delivery systems. Intelligence assets try to locate enemy formations and attack positions, with the goal of determining the direction and composition of the enemy main attack.

In the conduct of the **defense**, artillery support can--

- Disrupt enemy preparations for an attack.
- Cause maximum attrition to attacking forces before they reach direct fire range of friendly troops.
- Repel any attacking force that reaches or penetrates OPFOR defenses.

Careful analysis of the terrain over which the enemy will advance, and channeling his movement, create conditions for decisive fires in the defense. The use of mines can canelize and delay targets in **kill zones** that are under observation and covered by artillery fires. Firing artillery-delivered mines into the kill zone can further complicate the enemy's decision on whether to continue the attack, or exit.

Maneuvering massed firepower against key groupings at the crucial moment is critical. Primary artillery missions in defense are **counterpreparatory fires** and **fires against an attacking enemy**. Other defensive artillery missions include support of forces in the security zone and at forward positions, as well as covering gaps and open flanks with fire.

Counterpreparatory Fires

Counterpreparatory fires are rocket, missile, artillery, and air strikes intended to annihilate or neutralize enemy forces preparing to attack. These fires should surprise the enemy and should start before the enemy's preparation fires. The OPFOR would use all appropriate fire support to reduce the effectiveness of the enemy's preparatory fires.

Phases of Fire Support (Defense)

To facilitate centralized control and effectiveness, the OPFOR divides fires against an attacking enemy into four phases. These are --

- **Phase I**: Fire interdiction of advancing enemy troops.
- **Phase II**: Fire to repel the enemy attack.
- **Phase III**: Fire support of defending troops.
- **Phase IV**: Fire destruction of the enemy during a counterattack.

Phase I: Fire Interdiction

Fire interdiction of advancing enemy troops occurs when the enemy deploys into battalion columns. It continues until the enemy forces deploy into attack formations. Attached or supporting artillery units may occupy temporary firing positions beyond the forward edge of defense. This allows them to support their maneuver units in the security zone, such as combat security outposts. From such forward locations, the artillery can also strike the enemy at greater depth. Where possible, the destruction of enemy units, as they move up, is the goal. However, when target intelligence is inadequate, the OPFOR desires to cause disruption and delay by all available assets.

When assuming the defensive while already in contact with the enemy, the fire interdiction phase concentrates on the enemy's second echelon. Denying the enemy good target intelligence for his preparation is essential throughout the period before the he attacks. As much artillery as possible would remain silent until needed to repel a major attack. Batteries used before the main enemy attack would fire from temporary firing positions or act as roving batteries to confuse enemy intelligence.

Phase II: Fire to Repel Enemy Attack

The most important phase is fire to repel the enemy attack. This phase begins when the enemy deploys into attack formations and ends when he enters the first defensive positions. The OPFOR creates a zone of continuous fires in front of the defense. To do this, it must attack coordinate artillery fire with anti-tank weapons and all weapons of the maneuver units.

During this phase, OPFOR artillery tries to break up enemy attack formations, splitting armor from infantry by firing planned concentrations in front of defensive positions, and minefields in gaps between strongpoints, and in depth. Guns and MRLs start to engage the enemy 15 to 25 km from the forward edge, and howitzers open fire when the enemy is within 10 to 15 km. All these weapons use massed fires (or short but intense fire strikes, no more than 4 minutes in duration). After 15 to 20 minutes, units displace to alternate firing positions to avoid counterbattery fire. During this phase target priorities shift to:

- Enemy groups attacking at the forward edge.
- Enemy groupings behind the forward edge.
- Enemy artillery, mortars, and antitank weapons.

Phase III: Fire Support of Defending Troops

Fire support of the defending troops occurs when artillery units attack enemy forces that have penetrated the defensive positions of first-echelon maneuver battalions. The goal is to create **kill zones** that destroy the enemy, preventing him from continuing the offense into the depth or flanks. Some batteries may enter preselected direct fire positions. The defenders can fire against individual targets. Also, the OPFOR may use artillery barrier fires to cover exposed flanks.

The OPFOR expects the enemy to penetrate the defense but to pay an appropriate price. Canalizing the enemy is the goal during this phase. The artillery supports defensive positions in depth, and disrupts the enemy by separating his infantry from armor and his fighting troops from their logistics support. If necessary, artillery may even use direct fire methods against armored penetrations. Where the enemy breaks through, artillery can use maneuver by fire to lay barrier fires on the enemy forces prior to their engagement by second-echelon or reserve forces. Generally, the artillery plays a key role in creating suitable conditions for the launching of a counterattack.

Phase IV: Fire Destruction of Enemy During Counterattack

The final phase of defensive fires is the destruction of the enemy during the counterattack. Its goals are to recover lost positions, destroy penetrating enemy forces, and to capture a line to launch the offensive. This phase has three subphases for artillery support:

- Support for the forward movement of troops.
- Preparation of the counterattack.
- Support of the counterattack.

A successful counterattack requires a stabilized line of contact. This line allows enough time for the second-echelon forces to advance and deploy for the counterattack. Fires must cover the forward movement of OPFOR troops while also engaging enemy weapons systems that could impede the move forward.

Maneuver by Fire

As in the offense maneuver by fire in the defense, consists of shifting concentrated fires against the enemy's attack formations, and targets in the enemy rear. In the defense, it can--

- Destroy the enemy as he deploys to attack.
- Repel the attack.
- Support a counterattack force.
- Protect gaps in the defenses.
- Seal off enemy penetrations.
- Assist neighboring units.

Wide use of maneuver by fire helps the defending commander achieve fire superiority at the critical time in decisive sectors. The defensive fire plan normally includes plans for maneuver. In such planning, artillery units have several supplementary assigned sectors of fire. These sectors cover areas along the supported unit's flanks and the gaps between units. **Barrier fires** are the primary type of defensive fires. Barrier fire is a continuous curtain of defensive fire across the approach of attacking enemy forces. Although normally used in the defense, it also has applications in the offense against enemy counterattacks. Barrier fire may occur in conjuction with fire concentrations, massed fires, and directly aimed fire from tanks and guns. The types of barrier fire are--

- Standing barrier fire.
- Rolling barrier fire.

These methods of barrier fire provide the ability to shift fires as the enemy maneuvers.

Standing Barrier Fire

Standing barrier fire uses a single line of concentration to disrupt an enemy attack. The OPFOR plans standing barrier fires well in advance. It projects artillery fires for likely tank avenues of approach. Ground observation posts observe these fires planned in front of, and to the flanks of, the defensive posi-tions. All the artillery in a formation, except MRLs, fires the standing barrier fire. The fire planner assigns each battalion or battery a sector on the line of fire concentration. He computes the width of each unit's sector based on 50 meters of coverage per gun (howitzer) or mortar.

The line of concentration for the standing barrier fire must be no closer than 300 to 500 meters from friendly troops for safety. This allows gunners to fire AT weapons in direct fire at enemy tanks, IFVs, and APCs as they come through the barrier fires. Standing barrier fires begin when enemy tanks and infantry approach the planned line of fire concentration. The fires continue at rapid fire until they cut off the enemy's infantry from his tanks and halt his attack. If the enemy maneuvers around the fire concentration line, the fires shift to the new approach.

Rolling Barrier Fire

Rolling barrier fire uses several lines of concentration. Each line lies successively closer to OPFOR defending troops. Lines of concentration for the rolling barrier fire should impact on terrain that a ground observation post can see. Distances between lines of fire concentration are 400 to 600 meters or more. The final line of concentration closest to friendly troops is 300 to 500 meters from forward defensive positions. The fire planner assigns every battalion or battery participating in the fire mission a sector of fire on each of the lines of fire concentration. He bases the width of each sector on 25 meters of coverage for each gun (howitzer) or mortar.

Each individual line of concentration has a number in sequence, beginning with the one farthest from the defensive positions. The rolling barrier fire begins the moment the lead tanks or APCs approach the initial line of fire concentration. The fire continues on that line

until the bulk of the advancing force has moved out of the zone where rounds impact. Then the fire shifts to the next line of concentration. Fires continue to shift until surviving enemy forces have passed through the last zone of fire concentration.

Roving Guns and Batteries

The goal of roving guns and batteries is to confuse the enemy as to the deployment and fire plans of friendly artillery forces. Plans for the deployment of roving guns or batteries are very thorough. The plan covers:

- Locations of positions.
- Method of fire.
- Number of rounds to be fired from each position.
- Movement schedule of the gun or battery.
- Duration of its mission.

Roving guns and batteries may leave camouflaged decoys in the primary firing position to create the impression of use. Figure 7-19 shows an example of a roving battery employed in a maneuver battalion's defense area.
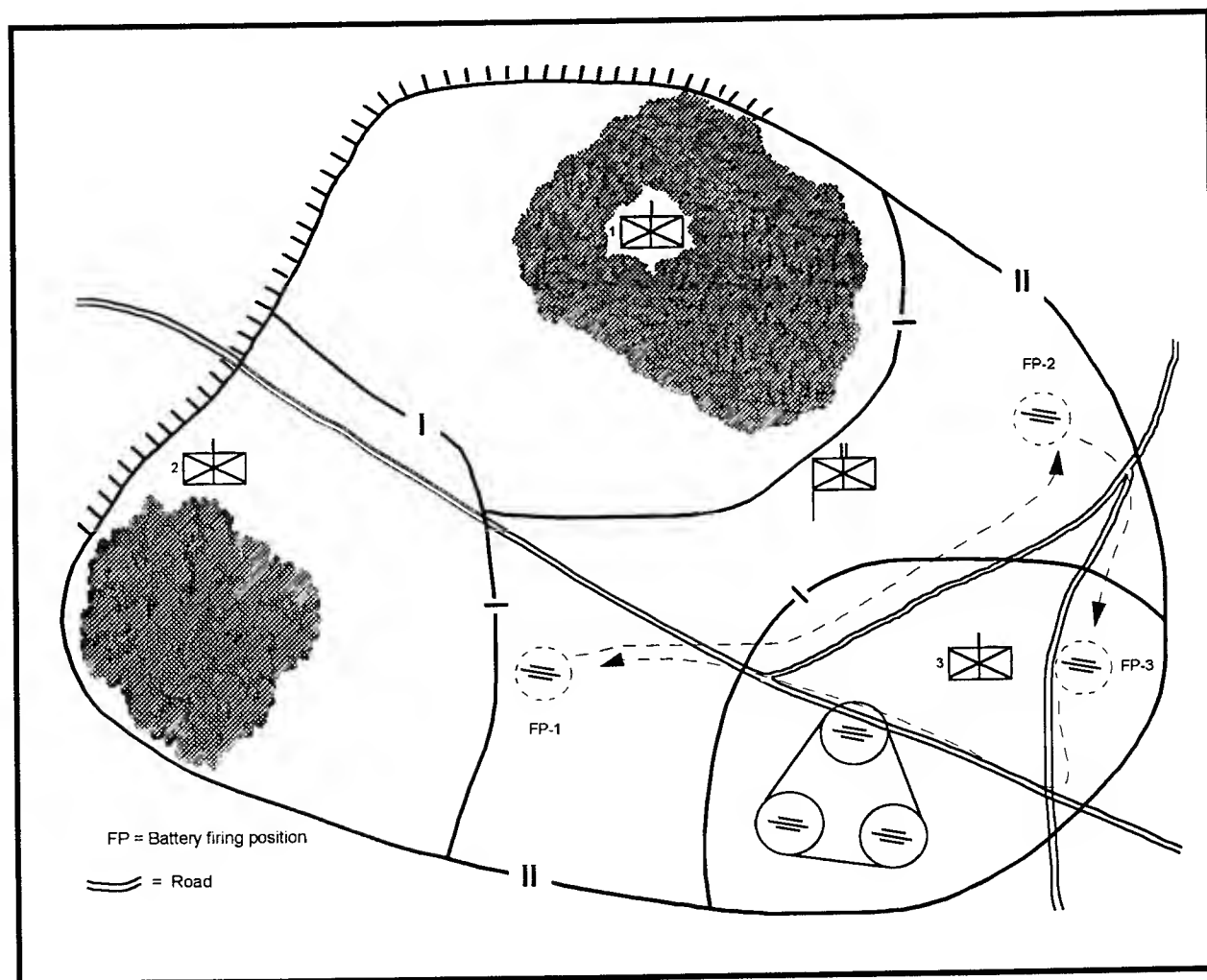
Figure 7-20. Roving battery employment in a motorized infantry battalion defense.

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The OPFOR concept of antitank (AT) support states that effective AT combat demands close, careful, and complete integration of AT weapons into the AT fire support plan. Antitank fires play a decisive role in repelling enemy armor attacks. The most effective ways to destroy enemy armored vehicles in the close battle are by direct fire from AT guns, antitank guided missiles (ATGMs), and tanks. The maneuver commander develops the AT fire support plan in great detail. After coordination, the AT plan becomes an integrated part of the artillery support plan at the highest level necessary to accomplish the destruction of enemy armor. Fire support planners conduct detailed terrain analyses to identify armor approaches. They then site weapons to provide in-depth, mutually supporting coverage of armor approaches and protection to flanks. They place special emphasis on the organization of an observation and early-warning network.

ANTITANK WEAPONS

Like most modern armies, the OPFOR divides AT weapons into two categories: **general** and **special** AT weapons. Although this chapter focuses on the latter, both types of weapons contribute to the overall AT effort.

General AT Weapons

General AT weapon systems include **surface-to-surface missiles (SSMs), aircraft, tanks,** and **artillery.** The purpose of these weapons is to destroy a variety of battlefield targets including tanks and other armored vehicles. Any artillery-type weapon (over 20 mm) should have an antiarmor capability. Antiaircraft guns can also fire against ground targets. Both fixed- and rotary-wing assets, multiple rocket launchers (MRLs), massed artillery, and SSMs may engage detected enemy armor in its assembly areas.

Further, minelaying helicopters may lay hasty AT minefields that can prevent or slow movement of enemy armor.

Indirect artillery and MRL fires are effective in isolating enemy tanks from supporting forces and forcing tank crews to secure their hatches. These indirect fires can increase the vulnerability of attacking tanks to special AT weapons by stripping them of their supporting forces. However, the smoke and dust of impacting rounds can degrade the effectiveness of OPFOR direct fire systems by impeding gunner vision.

Also, the OPFOR continues to add ATGMs to its helicopters, to increase its AT capability. The OPFOR has also improved the survivability of these attack helicopters on the battlefield. Helicopters firing ATGMs are effective against moving armor targets at greater ranges than many ground AT systems. These helicopters usually play an important part in the coordinated destruction of the enemy. (See Chapter 9, Air Support for more detail.)

Special AT Weapons

Special AT weapon systems consist of **ATGMs, AT guns, recoilless rifles,** and **AT grenade launchers (ATGLs).** The purpose of these weapons is to destroy armored vehicles by direct fire. ATGMs are effective AT weapons, but have their limitations due to low rates of fire, and visibility requirements. Some AT forces have a mix of ATGMs and other direct fire weapons. These direct fire weapons provide quick-response fires at medium, short, and point-blank ranges, and under favorable visibility conditions.

ORGANIZATION AND EQUIPMENT

The General Staff has several AT battalions it can allocate to an army or military region. In turn, the army or region can allocate an AT battalion to a division or district expecting the greatest armor threat. This battalion may have the same organization as the "standard" AT battalion organic to some divisions. However, the allocated battalions may have all three of its batteries equipped with AT guns, rather than ATGMs. The remainder of the section addresses the types of organizations and equipment organic at division and below.

Divisions

Mechanized, motorized and light infantry divisions generally have an organic ATGM battery. However, some mechanized and motorized divisions may have an AT battalion. This AT battalion normally consists of two AT gun batteries, and one ATGM battery. (See Figure 8-1.) The AT gun batteries have two platoons of three guns each. The ATGM battery has the same organization as those organic to many infantry brigades. It has nine vehicle-mounted ATGM launchers, in three platoons of three vehicles each. When possible, engineer units colocate with the battalion to help construct AT obstacles.

Districts and Separate Brigades

Separate mechanized infantry brigades and well-equipped districts may have either a "standard" AT battalion or a battalion composed of three ATGM batteries and no AT gun battery. However, districts and all types of separate brigades are more likely to have only an ATGM battery to serve as their dedicated AT reserve. This ATGM battery may have either 9 or 12 vehicle-mounted ATGM launchers in three platoons of three or four vehicles each.

Divisional Brigades

Divisional motorized and light infantry brigades normally have an ATGM platoon equipped with six manpack ATGM launchers. Divisional mechanized brigades and separate brigades have an ATGM battery, like the one found in separate brigades.

Battalions

Light and motorized infantry battalions have AT platoons with both four manpack ATGM launchers and two recoilless guns. Mechanized infantry battalions have an ATGM platoon in addition to relying on their IFVs' main armament for AT protection. On the other hand, there are no AT guns or ATGMs in the tank battalion. Besides the AT ammunition for the tank's main gun, the only AT capability in a tank battalion, is two ATGLs.

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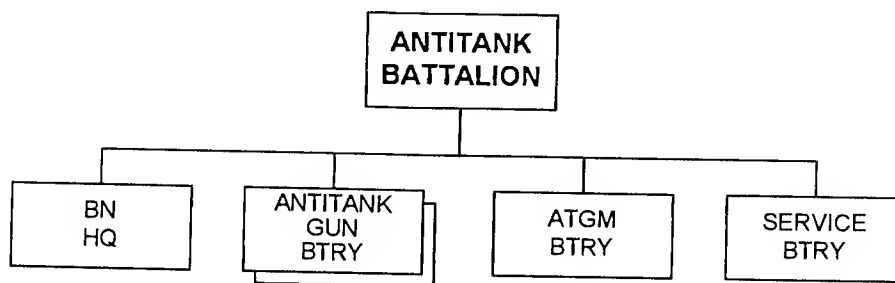
Figure 8-1. Standard AT battalion.

Below battalion level the only AT weapons are ATGLs. These ATGLs are organic to the infantry squads of the mechanized, motorized, and light battalions. These AT weapons provide point defense against enemy armor, and may find use against other hardened targets as necessary.

ANTITANK RESERVE

All infantry organizations at battalion and above have an organic AT element. The infantry commander usually designates this element as his AT reserve. The tank battalion belonging to some infantry divisions, lacks a special AT unit. Therefore, infantry divisions may use a tank unit in the AT reserve role. The basic missions of the AT reserves are--

- To screen the advance of friendly units moving to attack.
- To repel enemy tank attacks or counterattacks.
- To screen the deployment of second echelon and reserves.
- To secure the flanks.

The AT reserve has application in both the offense and defense. It may consist of AT guns and/or ATGMs. In infantry brigades, it generally works with an engineer mobile obstacle detachment (MOD) that can lay hasty minefields. The AT reserve can also include tanks to deploy rapidly and meet tank threats. When the AT reserve has additional assets (flamethrowers, tanks, or combat engineers) attached, these elements are normally subordinate to the AT unit commander. Command relations of AT units under conditions of attachment or support are comparable to those of field artillery units. The maneuver unit commander assigns missions to the commander of the AT unit serving as his AT reserve.

The position of the AT reserve in the combat formation and its distance from the forward edge (or head of tactical march column), depend on the tactical situation. If a generalization is necessary, it would be that the AT reserve deploys between the first and second echelon. Both in the advance and in defense, it is usual to designate two, three, or even more alternate lines of commitment on each axis, depending on the assessment of likely enemy actions.

AT reserve deployment, and the laying of protective minefields by associated MODs, usually occurs at the last minute. It sometimes takes place under enemy fire and can rely on smoke cover to protect deployment. While risky, this ensures that the AT reserve has deployed on the correct axis because the enemy has already committed himself to that direction. The sudden appearance of such a reserve can inflict considerable delay and disruption if the enemy has not anticipated its use.

FORMATIONS AND DEPLOYMENT

AT units may deploy in **one line, two lines**, or **echeloned right** or **left**. They can also form a horseshoe or circle, or establish an "L"-shaped ambush. Platoons within a battery or the batteries of a battalion can adopt these formations. Defense in depth and mutually supporting fires are the principles that guide the placement of the weapons within a platoon or battery.

Antitank Battalion

Ideally, an AT battalion, conceals itself in a hide position and deploys to firing positions on each likely tank approach. The terrain dictates the precise shape of deployment. Figure 8-3 gives examples of possible AT battalion formations.

The most common formation for the AT battalion is **two lines** of batteries The most common formation for the battalion has the two AT gun batteries forward and the ATGM battery, with its longer range, in the second echelon, providing depth. Battery firing positions are up to 1,000 meters apart. Alternate firing positions for the battery in the second line are normally on the flanks. The **echelon-right (or -left)** battle formation covers tank approaches from both the front and one of the flanks.

Weapons employed at the top of a **horseshoe** formation open fire at extreme ranges, inviting enemy tank attacks so that the other guns can open flank fire. If enemy tanks penetrate the kill zone of a horseshoe, all weapons deliver fire simultaneously.

The AT battalion can also use an "L"-shaped system. It combines the fires of AT guns with ATGMs. Antitank guns are on the longer side of the "L" firing flank shots. The ATGMs, with greater range capabilities, are on the short leg of the "L." This type of ambush maximizes the capabilities of both weapon systems.

The AT battalion and battery commanders control fire from command observation posts (COPs) colocated with one of the firing positions. The battalion commander sends out a forward observation post (OP) to give warning of approaching enemy tanks.

Antitank Gun Batteries

Antitank gun batteries and platoons usually emplace 300 to 500 meters apart, with terrain sometimes dictating spacing up to 1,000 meters apart. Antitank guns usually are about 200 meters apart laterally and may occasionally be up to 300 meters apart. The terrain, the direction of the threat, and the need for mutual support determine the details of the layout. An AT gun battery can use the same formations as an AT battalion, except for the "L"-shaped ambush. The battery can also use a circle formation. Figure 8-2 gives examples of possible AT battery formations.

ATGM Battery

An ATGM battery deploys with distances of 100 to 200 meters between ATGM launchers and up to 1,500 meters between platoons. Normal frontages are 500 meters per platoon and 1,500 meters per battery. Battery commanders and platoon leaders control the fire of the launchers from OPs that usually are slightly to the rear and preferably on high ground. This battery can use any of the formations shown in Figure 8-2. However, the fact that this battery has three platoons gives it greater flexibility. Within platoons, vehicles (with mounted ATGM launchers) may be one-up, two-up, or echeloned to a flank. Whenever possible, ATGMs are on high ground, clear of restricting or wooded terrain.
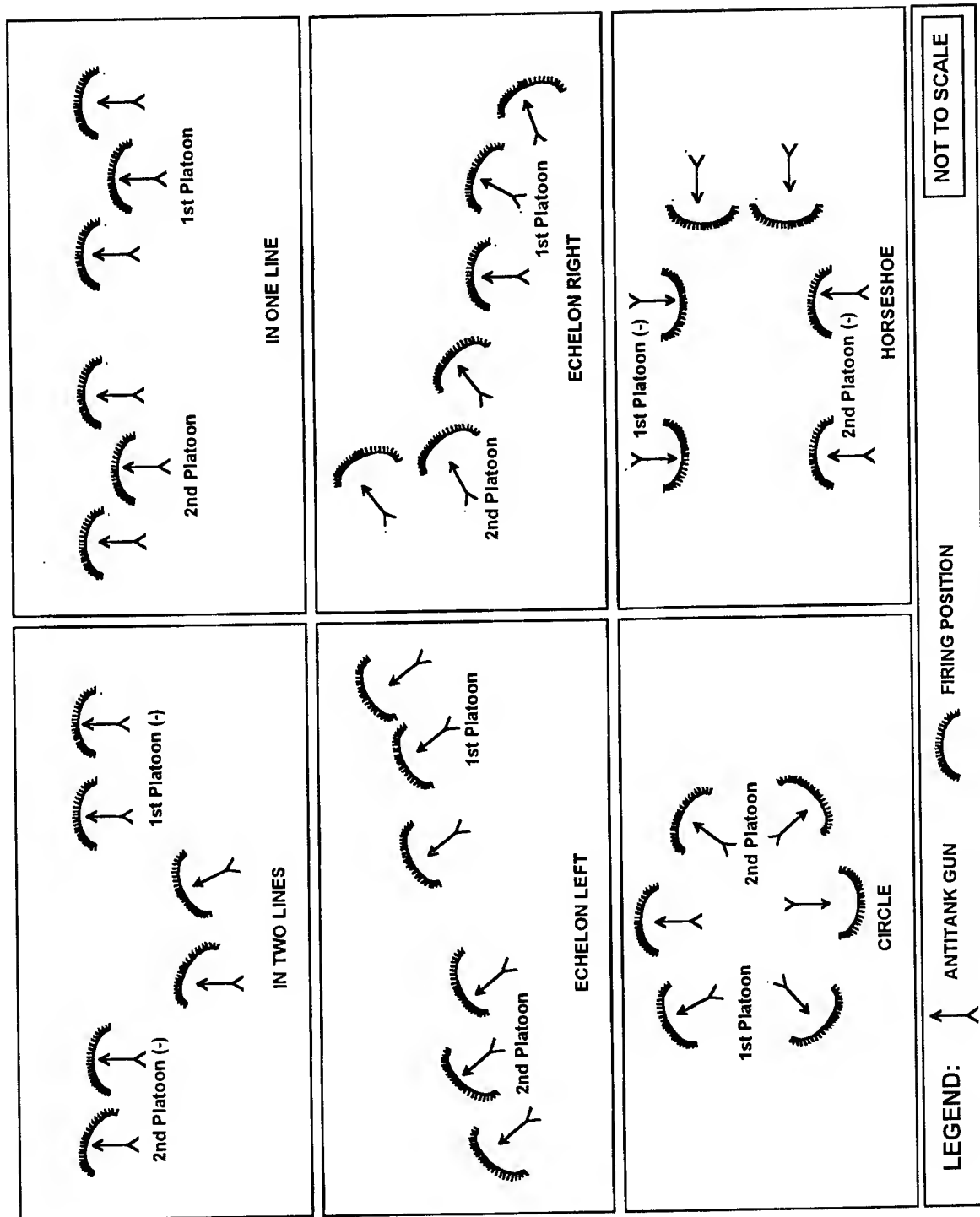
Figure 8-2. Antitank gun battery formations.

8-5
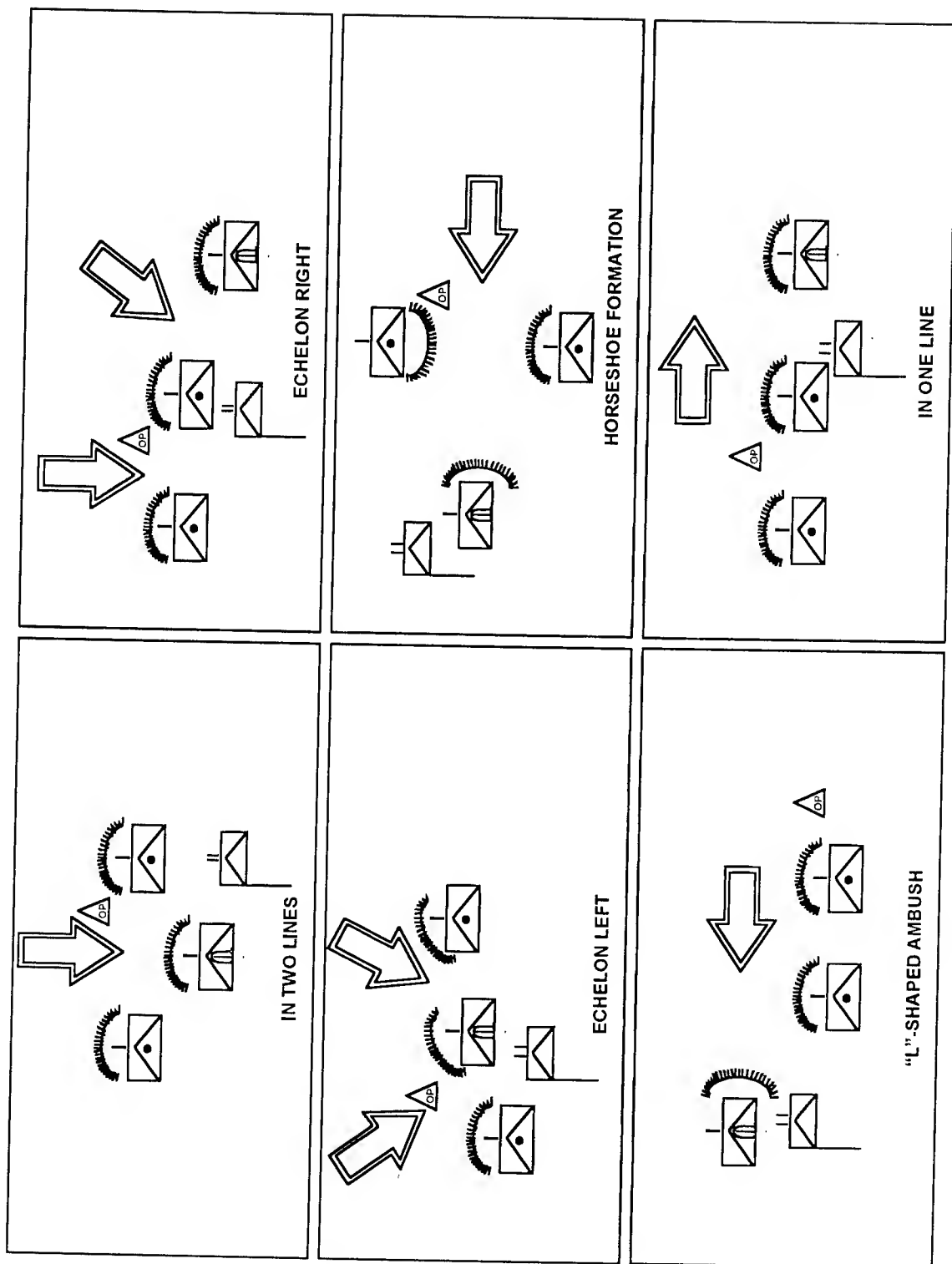
Figure 8-3. Antitank battalion formations.

8-6

SUPPORT IN OFFENSE

In the offense, planned AT fire support consists of three phases. These phases are preparation, support, and accompaniment.

Preparation

During the fire preparation of the attack, AT weapons may be part of the fire plan, attacking armored targets in the enemy's frontline defenses. In preparation for the attack, AT assets locate on the most likely armor approaches, or they may position themselves well forward to participate in the artillery preparation phase. They can conduct direct fire against the enemy's armored vehicles. The AT guns can conduct indirect observed fire, particularly when there is insufficient artillery. Some AT guns can also fire high-precision munitions against targets beyond direct fire range.

Typical tasks for AT units during the preparation phase are to--
- Contain enemy armor.
- Cover the deployment of attacking units.
- Engage armored and AT targets on the forward edge of the enemy position as part of the preparatory fires.

The OPFOR understands the effect enemy AT capabilities has on offensive combat. Therefore, it plans to destroy these weapons early to expedite its forward movement. It expects the enemy to locate his AT weapons within 1.5 km of the forward edge of his own defenses. OPFOR elements conduct a thorough reconnaissance to locate these AT systems with a goal of neutralizing 70 to 80 percent of them during the artillery preparation.

Support

During the support of the attack phase, AT units can perform the following tasks--
- Cover the flanks.
- Support the deployment of the second echelon or reserve.
- Assist in consolidation on the objective.
- Protect artillery formations while moving.

Once the attack begins, AT weapons are most likely to serve in an AT reserve role to block any enemy counterattacks. During the offense, the AT reserve usually moves behind the advancing first echelon on the most exposed axis. The maneuver commander or the artillery fire planner chooses successive firing lines and alternate locations to cover likely tank approaches. The AT unit commander selects firing positions. The AT reserve advances to these successive lines, based on the progress of the attacking force and on the order of the maneuver unit commander.

In anticipation of a meeting battle, AT units travel at the rear of the advance guard or at the head of the main body. Upon contact with the enemy, they deploy into the threatened sector to cover the deployment of the maneuver force.

In the offense, the AT reserve may also receive reinforcements from tank or motorized infantry troops. The AT reserve can move parallel to the main body on an open flank, or within the main body ready to deploy to either flank, or behind units advancing in battle formation. The goal is to position it wherever it can quickly counter any armored threat to the advance or cover the deployment of the main body. Attack helicopters, when available, provide a very flexible and potent antitank reserve or flank protection force. (See Chapter 10.)

Accompaniment

During the accompaniment phase, the OPFOR selects firing positions in the depth of the enemy positions from which to defeat armored counterattacks. If ordered to deploy to one of these positions, the AT unit commander leads his weapons forward, puts out OPs, and moves himself to a position from which he can direct fire. He maintains close contact with the maneuver force commander.

SUPPORT IN DEFENSE

The AT fire support plan generally needs more detail for the defensive phase of a battle than for the offensive phase. The AT fire plan places enemy armored forces under continuous fire from their first detection until their destruction in a **kill zone** in the midst of first-echelon defensive positions. (See Chapter 6 for further discussion of kill zones.)

In the defense, AT units have the following missions:
- Destroy enemy tanks and armored vehicles that have penetrated the first defensive echelon.
- Reinforce AT defense of the first echelon.
- Cover the deployment of counterattacking units.

If the defending units have to withdraw, AT assets can cover the withdrawal of forward elements. AT units then break contact, displacing by battery or platoon to subsequent firing positions.

The AT fire plan is crucial to the success of the defense. Organic weapons within company strongpoints, including tanks attached to mechanized or motorized infantry companies, use interlocking fires to ensure continuous AT coverage of the forward edge. AT weapon units may participate in kill zones to ambush enemy units that penetrate OPFOR lines. Also, other AT fire plan assets include artillery, tanks, and light armored vehicles.

Antitank Battalion

In normal terrain, the AT battalion is unlikely to deploy in forward defensive positions. Instead it serves as a division or brigade AT reserve. The tactics employed are similar to those described for the offense. When faced by an adverse air situation, OPFOR commanders prefer not to deploy their AT reserve in a hide position initially, because it might suffer heavy casualties while deploying. In such cases, it is preferable for the AT reserve to dig in on a well camouflaged firing line covering the most threatened axis. It could also have alternate firing lines designated.

The OPFOR defense consists of a network of company strongpoints, with interlocking fields of fire integrated with a barrier plan. In emplacing these strongpoints, the tank threat receives priority. Tanks, howitzers, or AT systems from higher level can reinforce the organic AT capability of the infantry battalion defense area. The mission of the strongpoints is to cause casualties, disrupt the cohesion of the enemy attack, and canalize the enemy into prepared kill zones.

At the start of a defensive action, the AT reserve normally occupies camouflaged positions from which it can cover the most likely tank approaches. The commander selects from one to three firing lines to which his weapons may deploy on each possible approach. If time allows, units then conduct reconnaissance and begin engineer preparation of firing positions and routes to them.

The maneuver commander may integrate an AT unit into the defensive first echelon and designate positions for it to occupy in either a battalion defense area or company strongpoint. Combat formation of the AT reserve supporting the maneuver unit depends on the mission and terrain. The AT reserve must--

- Concentrate fire on tanks by direct fire along armor avenues of approach.
- Cover approaches to AT barriers by fire.
- Closely coordinate the weapons of the AT units and the AT weapons of the company strongpoint or the battalion defense area.
- Echelon the firing positions in depth.
- Conduct flanking fire on enemy tanks.
- Maneuver within the area of deployment and to firing lines.

In the defense, ATGMs have an engagement range that extends out to 3 to 5 km from the forward edge. Tanks firing from defilade positions can engage attacking tanks up to 3 km in front of the defensive positions. The engagement range for AT guns extends out to about 1 to 2 km depending on the type of ammunition. If the defending units must withdraw, ATGMs and AT guns cover the withdrawal of forward elements. The AT units break contact and withdraw to a new firing position when enemy armor has closed to 500 meters. Also, the withdrawing defending units will use ATGLs on enemy armor within 500 meters. Many ATGLs currently available can defeat the frontal armor of most modern main battle tanks.

Antitank Platoon

In both motorized and light infantry battalions, the AT platoon is part of their weapons company. The brigade or battalion commander usually retains direct control of his AT platoon and assigns it firing lines to occupy as the enemy attack develops. As a rule, he employs platoon at full strength as his reserve, rather than dividing it among subordinates. In restrictive terrain however, he may attach the entire platoon to a subordinate unit in his first echelon. These AT platoons have two ATGM squads and one recoilless gun squad as well as ATGLs.

The mechanized infantry battalion has an ATGM platoon besides the main armament of its IFVs to provide protection against enemy armor. This ATGM platoon consists of three squads.

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OPFOR doctrine emphasizes **air support of ground forces**. It recognizes various phases of air support within offensive and defensive actions. Direct air support is a practiced element of OPFOR tactics. Air power, with its speed, flexibility, range, and accuracy, provides effective fire support. The other primary means of fire support, artillery, is often unable to keep pace with ground maneuver forces. Air Force aviation assets provide continuous fire support to mobile ground maneuver formations and can respond quickly to changes in the battlefield situation. Aviation assets strike targets out of artillery range and support maneuver to the tactical and operational depth of the enemy.

The ground component of the OPFOR does not have organic fixed- or rotary-wing aircraft. The Air Force has sole control of all aircraft. The Air Force maintains all aircraft and assigns all missions. When the ground commander requires air support, he requests it through channels. With the exception of remotely piloted vehicle employment, this chapter deals with direct air support to ground forces. For information on structure, organization, and roles of the Air Force, see the *Light OPFOR Operational Art Handbook.*

MISSIONS

Both **helicopters** and **fixed-wing aircraft** perform air support missions. While in the various missions shown below are similar for the two types of aircraft, each has unique capabilities, limitations, and availability that must be taken into account. For instance, attack helicopters have reduced logistics requirements compared to fixed-wing aircraft,

allowing their deployment close to the main battle area. This proximity to forward ground forces enhances their ability to respond to air support requests. Helicopters have two other major advantages over fixed-wing aircraft: the ability to concentrate and maneuver undetected for a strike and the capability of their pilots to rapidly evaluate battlefield conditions. The vulnerability of helicopters to enemy fighters and air defense is a concern. The OPFOR prefers to employ helicopters in ground support only to the range of its air defense umbrella.

Conversely, OPFOR employs fixed-wing aircraft more frequently in strikes on previously reconnoitered, fixed or semifixed targets, in the immediate enemy rear, or at greater depths. Fixed-wing aircraft are vulnerable to ground-based air defenses when executing ground attacks. This necessitates a low-altitude, high-speed target approach and minimum time in the target area. These limitations severely restrict a pilot's ability to properly identify the target.

Helicopters

Ground force commanders rely primarily on attack helicopters and ground-attack aircraft to fill the direct fire air support role. The role of OPFOR helicopters continues to expand concurrent with the expansion in their number. This increase in the use of helicopters has freed fixed-wing aircraft to attack deeper targets. Helicopters perform a variety of missions, some of which are--

- Direct air support.
- Troop transport.
- Logistics.

- Reconnaissance and observation across the forward edge.
- Command and control (C^2).
- Jamming.
- Liaison.
- Communications relay.
- Special missions. Smoke and chemical delivery or laying minefields. (See either Chapter 14 or Chapter 11 for further details.)

Fixed-Wing Aircraft

Fixed-wing missions vary depending on the type of airframe used, its capabilities, and available munitions. The ground component does not have aircraft. Therefore the ground commander must request air support. In the request he specifies--
- The type of support required.
- Time required.
- Location required.

The commander then forwards the request up through channels. He may or may not receive air support, depending on the availability of platforms and priority of mission.

The following are typical fixed-wing missions:
- Attainment of air superiority.
- Deep attack.
- Direct air support.
- Reconnaissance.
- Special missions.
- Bombing.
- Jamming.
- Logistics.
- C^2.
- Troop transport.

See the *Light OPFOR Operational Art Handbook* for specifics on capabilities and procedures of fixed-wing support.

COMMAND AND CONTROL

Upon mobilization, the Air Force sends an **aviation control element** to military districts and divisions. These liaison elements provide a link between the ground and air elements, identify targets, and direct attacking aircraft to the target. When the maneuver brigade receives support from fixed-wing aircraft or attack helicopters, it receives a **forward air controller**.

To ensure safe passage over friendly forces, the OPFOR emphasizes strict adherence to predetermined flight paths and timing. Coordination with ground-based air defense systems is critical. Within the boundaries of the State, the Air Defense Command is responsible for airspace management. Outside State boundaries, the commander of the division air defense regiment is responsible for airspace management in the division battle area.

Aviation Control Element

Military districts and divisions receive an **aviation control element** (ACE). The mission of aviation control elements is to--
- Advise commanders on the use of air assets.
- Transmit air support requests to aviation organizations.
- Maintain communication and control with aircraft in the battle area.
- Advise the commander of information derived from air reconnaissance.

The aviation control element has two sections. One section chief colocates with the commander, the other with the chief of staff.

Forward Air Controller

Ground force **brigades** have a **forward air controller** (FAC) attached when fixed-wing aircraft or attack helicopters support their missions. They request air support for the supported ground unit commander through the ACE. The FAC, colocated with the supported unit's command observation post, is an Air Force officer, usually a helicopter pilot, accompanied by appropriate communications personnel. The FAC's primary duties include--

- Advising the brigade commander on air matters.
- Serving as the communication link to the division's or district's aviation control element.
- Directing attacking aircraft to their targets.
- Refining target details.
- Coordinating the use of airspace in their battle area.
- Monitoring all aircraft operating within their battle area.

A ground force **battalion** seldom has an air representative. In certain conditions, however, battalions may receive a FAC to coordinate air support. An example would be when the battalion serves as a forward detachment or as a heliborne landing force. Normally, though, the ground battalion commander has no direct communications with air support assets.

FACs control all aspects of aviation missions. They plan air missions to support the ground commander's scheme of maneuver based on aircraft allocations from higher headquarters. They also establish control procedures, which normally include--

- Establishing an initial point (IP) 15 km behind the forward edge of friendly forces.
- Establishing attack points (APs), normally at maximum effective weapons range.
- Issuing control graphics.
- Marking friendly troop locations.
- Authorizing the flight to move from the IP to the AP.
- Directing the flight to climb, acquire the target, and attack. The FAC must maintain constant visual contact with the target to authorize attack.

Ground force commanders can request air missions through the FAC, who communicates through his parent unit. The FAC normally operates from a vehicle-mounted command post near the supported ground commander.

Airspace Management

The commander of the division air defense regiment is responsible for airspace management in the division battle area. The basis for coordination between aircraft and ground-based air defense systems is the establishment of zones of responsibility.

The establishment of egress and ingress corridors through air defense sectors for specific time periods enhances the coordination of aircraft and helicopter operations. This becomes a "safe corridor," approximately 500 meters wide, allowing the safe passage of OPFOR aircraft. The OPFOR also establishes time periods to fire on all aircraft or on no aircraft. Another airspace control method is the placing of ground-based air defense weapons "switch-off" (fly) mode in certain sectors or along predesignated flight corridors during an air mission. See Chapter 10, Air Defense Support.

The coordinated use of airspace over the battlefield and the delivery of ordnance in proximity to friendly troops are extremely difficult. Improper procedures inhibit quick reaction to changing combat situations. Air and ground force commanders establish coordination procedures before launching combat air missions.

To reduce the problems associated with the coordinated use of airspace, OPFOR planners do not normally use helicopters, ground-attack aircraft, and artillery simultaneously in the same fire sector. Attacks by aviation and artillery may coincide in time, but occur in different areas. To facilitate control, the OPFOR usually employs ground attack aircraft after the completion of the artillery preparation.

Planning and Preparation

Before an operation, the OPFOR General Staff issues orders establishing the objectives and goals. The Air Force determines the total number of ground-attack sorties it can generate daily. The military district and division then receive specific amounts and types of aircraft sorties. With this information, the ACE formulates the air support plan for the battle. This plan incorporates--
- The number of targets.
- The types of targets.
- Ammunition.
- Flight distance.
- The disposition of enemy air defenses.

The plan divides support requirements between the allocated fixed-wing and helicopter resources. Once approved, the air support plan becomes a part of the overall district/division fire support plan. The Air Force then allocates appropriate resources to the district/division to support the plan.

The Air Force issues appropriate orders to the units supporting the ground commander. These orders include--
- Targets.
- Numbers of sorties.
- Munitions.
- Flight routes (including ingress and egress).
- Communications.
- Mission timing.
- Coordination measures.

Air Force representatives at the division (or district) and brigade advise the respective ground commanders of the air support plan and its implementation. Ground commanders do not control aviation assets. The Air Force retains strict centralized control of its air support resources throughout the tactical air support process. Strict centralized control allows rapid reallocation of air assets to higher priority missions.

Mission Categories

The Air Force recognizes the criticality of providing tactical air support to the ground forces. Air strikes in direct support of ground maneuver forces are primarily preplanned. The maneuver commander identifies the targets, times, and desired damage for air strikes. The aviation commander determines the force type, number of aircraft, ordnance, and attack technique that will accomplish the strike mission. The air staff plans these strikes in great detail and integrates them with other forms of fire support. The OPFOR divides available air support into the following categories:
- Preplanned.
- On-call.
- Immediate.

Preplanned Missions

A preplanned mission is a mission planned well in advance of its execution, usually 24 hours prior to launch. These missions normally are against static or non-moving targets with known locations. The plan for preplanned strikes normally covers the first one to two hours of combat operations, but can cover a period of up to 24 hours in a static situation. Air crews study preplanned target assignments closely to determine the best tactical approach. They use large-scale maps for reference. In some cases, they use scale models of the terrain and targets to learn the terrain in their sector. This helps crews to determine ingress and egress routes and to plan tactical maneuvers. Once airborne, the aircraft proceed to a designated checkpoint behind friendly lines and confirm their target assignment with ground control. The OPFOR emphasizes strict adherence to predetermined timing and flight paths, and uses "safe" corridors through friendly air defenses.

ACEs and FACs maintain communications with attack aircraft either directly or through radio-relay aircraft. As the aircraft approach the target area, FACs establish communications. This ensures pilots correctly identify targets. When the pilots see the target, and the FAC confirms it, the flight leader assigns individual targets and orders the attack.

On-Call Missions

An on-call mission is one in which there may be a predesignated target, but the timing of the strike remains at the discretion of the ground force commander. These missions normally support maneuver forces not yet in contact with the enemy, but should make contact once aircraft become available. The on-call mission is basically the same as preplanned missions, except for the attack's timing. During a "window of availability," usually no longer than 4 to 5 hours, air mission launches may occur at any time. On-call missions have secondary targets planned in the event the window of availability expires before the primary target becomes available for attack. Planners may designate a target for on-call attack by aviation assets, but the maneuver commander can time the strike at his discretion. This gives him flexibility to move quickly if the target no longer threatens the attack. This also allows OPFOR ground forces to take advantage of opportunities without stopping for an unnecessary air attack. By using this method of engagement, the commander can conserve his air assets to use when needed.

Immediate Missions

The Air Force designates aircraft to respond only to requests from ground commanders for unplanned immediate air support. The ground commander submits a request for immediate air support to the next-higher headquarters. If a request for air support does not exceed the division commander's allocated sorties, he can order the strike through his ACE. As with preplanned support, the Air Force representative at division and higher level participates directly in the evaluation of each air support request and in coordination with the strike mission. The maneuver force commander holds a portion of available air assets in readiness to execute immediate missions against unexpected targets.

The Air Force prefers to use helicopters for immediate, time-sensitive requests close to friendly forces. However, the vulnerability of helicopters to enemy air defenses and high-performance enemy fighters is a concern to the Air Force. The OPFOR prefers to use helicopters in a ground support role within range of the air defense capabilities of the supported force.

The OPFOR uses fixed-wing aircraft more frequently in attacks against operational-level targets. High-performance aircraft are extremely vulnerable to terminal air defenses when executing a ground attack. This necessitates a low-altitude, high speed target approach and minimum time in the target area.

Levels of Combat Readiness

The OPFOR recognizes three levels of combat readiness for aircraft and crews. Aircraft in categories one and two respond to on-call missions. (See Figure 9-1.)

Aviation units tend to operate from forward arming and refueling points within 40 to 50 km of the forward edge. A flight of helicopters held at the highest state of readiness should reach its target in 15 to 20 minutes; a full squadron requires up to 25 minutes. Preparation of a second strike could take as little as 15 to 20 minutes depending on the number of helicopters involved and refueling capabilities.

AERIAL RECONNAISSANCE AND TARGETING

The division has no organic fixed- or rotary-wing reconnaissance assets. The Air Force provides all fixed- and rotary-wing reconnaissance support for military district and division combat actions. Depending on organizational structure, some divisions may have remotely-piloted vehicles (RPVs) for reconnaissance.

Remotely-Piloted Vehicles

The division chief of reconnaissance plans all RPV missions. Flight profiles vary according to the mission. For example, surveillance missions employ a figure-eight or racetrack pattern, maintaining the RPV over its assigned surveillance area. (See Figures 9-2 and 9-3.)

Category	Crew and Aircraft	Duration of Readiness	Time before Takeoff
One	Aircraft are fully serviced and armed. Combat crews are briefed on their mission and are in the aircraft ready to start engines. Ground personnel are assisting the combat crews.	1 to 2 hours	3 to 5 minutes
Two	Aircraft are fully serviced and armed. Combat crews are briefed and are on standby in the vicinity of aircraft ready to take off within a specified period of time after receiving a mission order.	2 to 4 hours	15 minutes
Three	Aircraft are refueled and serviced. Cannons are loaded. External systems (bombs, rockets, missiles, fuel tanks, etc.) are not loaded. Combat crews are designated, but not on standby. They have not been briefed on the air and ground situation, but will be before takeoff.	2 to 4 days	1 to 2 hours

Figure 9-1. Levels of combat readiness.
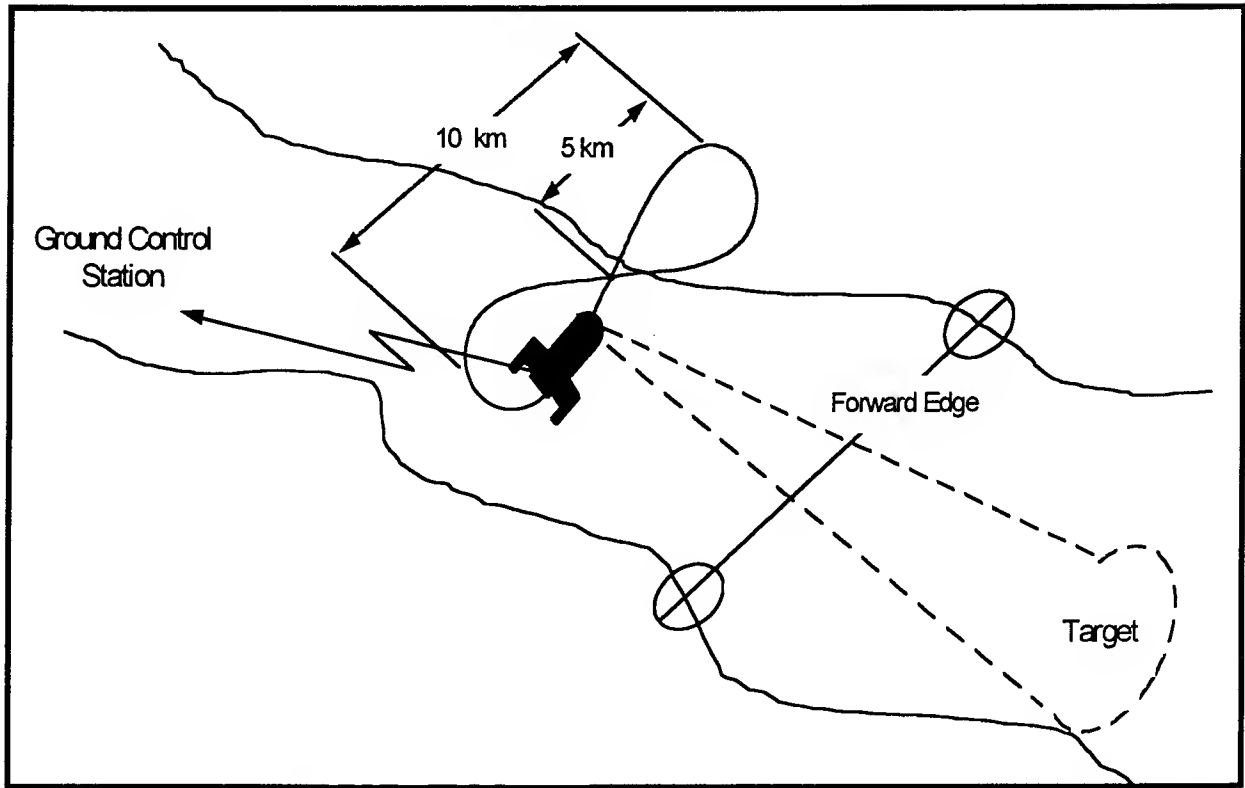
Figure 9-2. RPV figure-eight pattern.
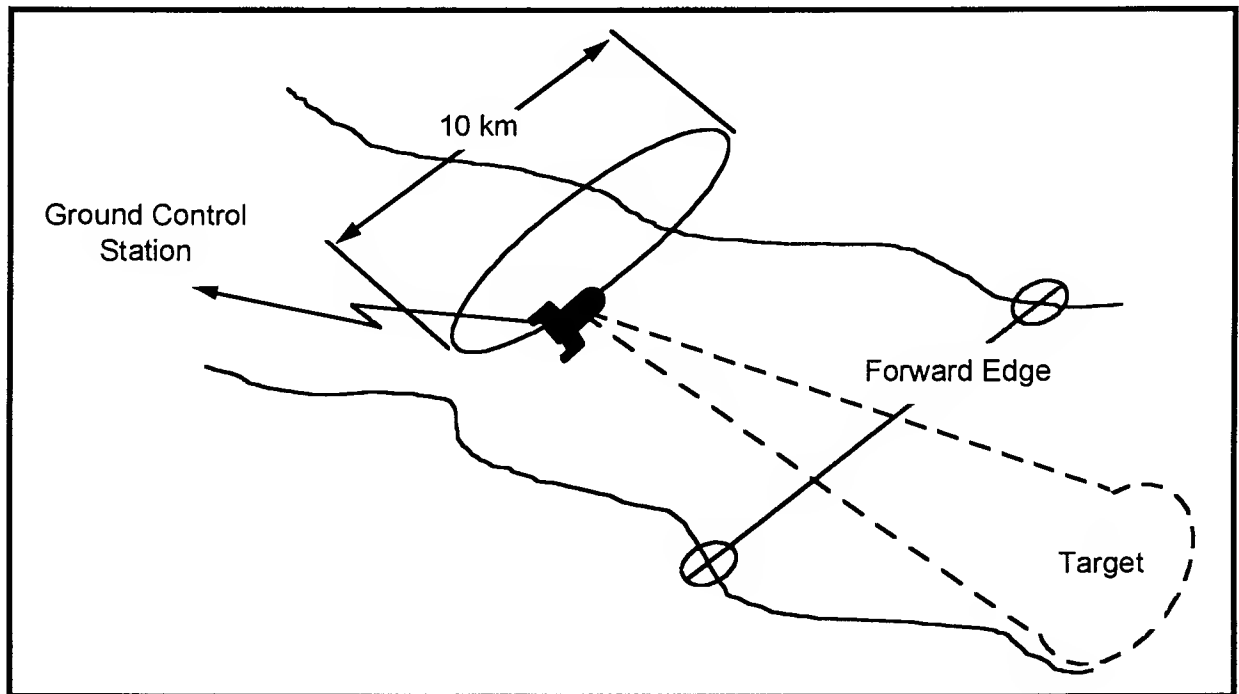
Figure 9-3. RPV racetrack pattern.

Reconnaissance, intelligence collection, target acquisition, and battle damage assessment missions employ a loop or zigzag flight pattern allowing thorough coverage over a specific target area. (See Figures 9-4 and 9-5.) RPV operators can vary these basic flight patterns in order to change its altitude, speed, or direction of flight.
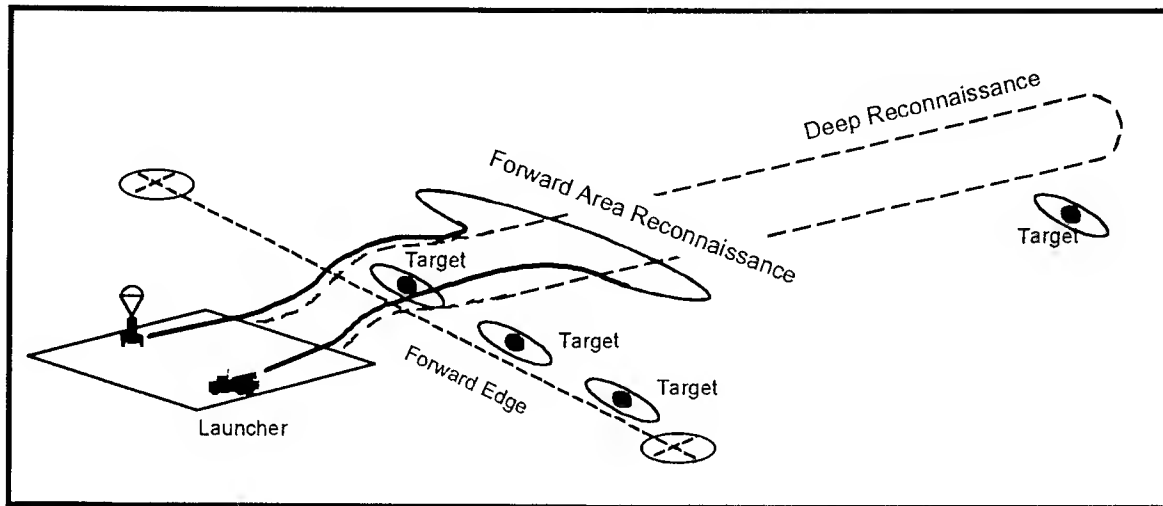
Figure 9-4. RPV loop pattern.
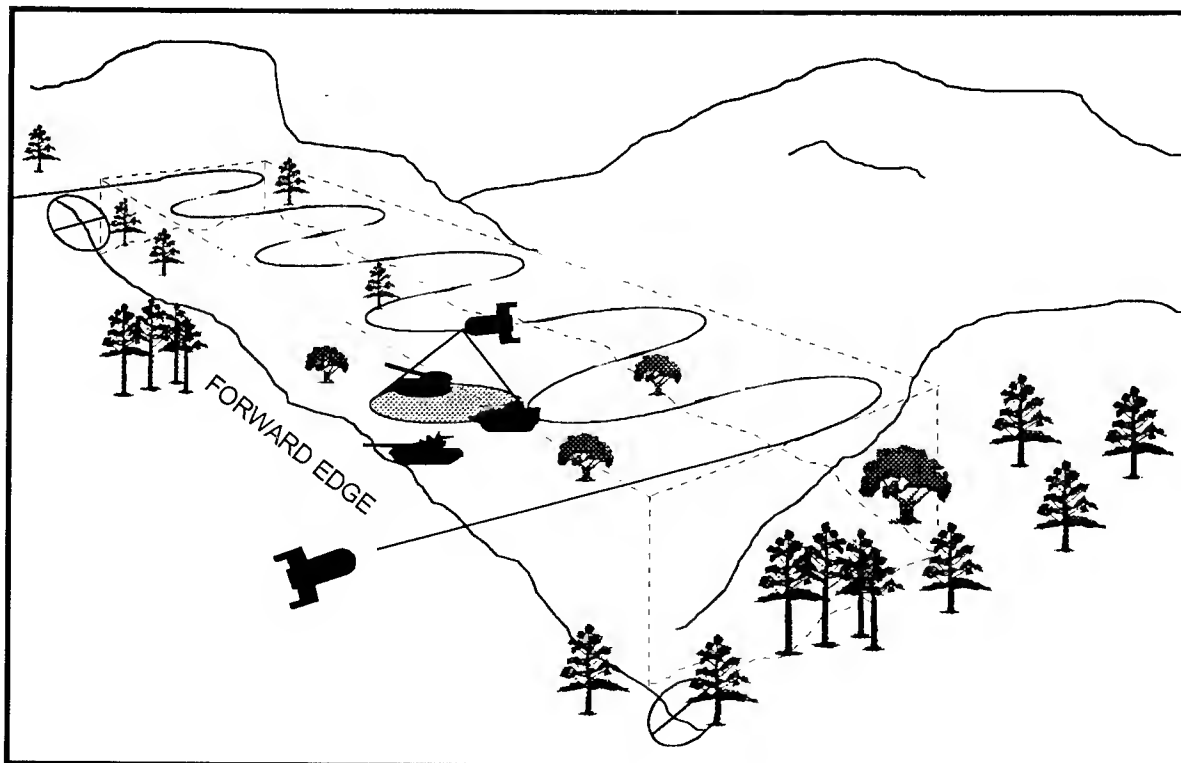
Figure 9-5. RPV zigzag pattern.

As the RPV acquires priority point and area targets during these missions, the operator immediately transmits the target locations directly via secure radio communications to the artillery command and observation post (COP) colocated with the command center. As a rule, only general target location (within 1 to 2 km) is possible. Occasionally, however, the RPV location, combined with terrain and map association, can make it possible to determine target location to within 100 meters.

Targeting

Air crews on any mission report enemy activity and targets. The crew then transmits the target intelligence to the FAC. The classification and location of these targets are the basis for planning air strikes. The OPFOR classifies targets as **single**, **multiple**, **line**, or **area**. Figure 9-6 shows the OPFOR classification of targets, and attack techniques.

OFFENSE

The OPFOR has steadily increased the offensive air capabilities of its fixed-wing and helicopter assets to support its fast moving

ground forces. It continues to improve the quality and quantity of all aircraft.

Attack Against Defending Enemy

The OPFOR desires to achieve total target destruction of the enemy during its initial attacks. It conducts air attacks on ground targets, such as enemy--
- Airfields.
- Air defense positions.
- Installations.
- Supply points.
- Tactical units.

Aircraft attack enemy motorized columns by striking the lead and rear vehicles with bombs, rockets, or cannon fire. After immobilizing the column, they attack the remaining vehicles.

Air support in the offense consists of four phases which correspond to the phases of the fire support plan. The four phases are:
- Support for movement of troops.
- Air preparation.
- Direct support to ground troops.
- Air accompaniment.

Classification	Example	Attack Technique
Single (or Point) Target	Rocket launcher, tank or armored vehicle, parked aircraft, or helicopter. Radar site, observation point, or bunker.	Single aircraft using low-level or dive delivery of ordnance. ARM employed against radars. Single helicopter using ATGM or rockets.
Multiple	Group of 10-20 single targets, occupying an area of 1 to 1.5 km.	Attack by a small group (2-8) of aircraft or helicopters with the appropriate ordnance.
Line	Tactical march column, train, or runway (usually 1 km or longer).	Attack by a single aircraft or a small group along the long axis of the target. Helicopters attack column from the flank.
Area	Dispersal or assembly areas of a battalion or larger unit, supply depot, large C^2 center, forward airfield.	Massive and concentrated air strikes, delivered from various altitudes and directions.

Figure 9-6. Classification of air strike targets.

The major differences between the phases is their time of employment. However, there are some differences in targeting, command, and aircraft. While all phases of air support can use both fixed-wing and helicopter assets during their execution, increasing numbers of helicopters enables them to play a greater role in the direct support of ground forces. The increasing number of helicopters also frees fixed-wing aircraft to strike deeper targets.

Air Support for Movement of Troops

Support for the movement of troops protects ground troops from air and long-range artillery fires as they move forward from assembly areas. During this stage, fighter-interceptor aircraft fly patrols to intercept and destroy any aircraft attempting to attack ground forces. Ground-attack aircraft strike deep to destroy aircraft and helicopters still at their home fields. This phase also targets long-range artillery that might strike at friendly troops while they are still far from the forward edge of enemy defenses.

Air Preparation

Air preparation takes place across a specified frontage prior to the beginning of a ground offensive. Although planned and executed at the operational-level, air preparation usually directly impacts the tactical battle. It can be simultaneous with the preparation fire of both the artillery and missile units and requires close, detailed coordination with these forces regarding targeting and timing. Air strikes in the preparation phase generally extend no farther than the enemy's corps rear area. Depending on the combat situation, the duration of an air preparation can be from 10 minutes to over an hour. Targets for fixed-wing ground-attack aircraft are those that tube artillery cannot destroy due to distance, mobility, or degree of hardness.

Direct Support to Ground Troops

Direct support to ground troops begins after the ground forces have made contact with the enemy. This direct support continues at least until the attacking units overrun enemy frontline positions. Direct support targets are those located at tactical and immediate operational depths. These targets include--

- Weapons of mass distruction.
- Fire support means.
- C^2 systems.
- Enemy reserves.

The majority of these strikes are preplanned. However, ground commanders may request immediate air attack missions within the limitations of the division's allocated resources for beleaguered ground forces. As in the air preparation phase, the targets generally are those beyond the destruction capabilities of artillery and missiles. Helicopters provide the majority of direct support to ground troops during the offense. However, fixed-wing aircraft may target forces in contact with, or in the immediate vicinity of, friendly troops.

Air Accompaniment

Air accompaniment occurs as OPFOR ground forces penetrate deeply into enemy defenses. The specific point at which air accompaniment begins is not clear. However, it is during the advanced stages of the battle when the ground forces outstrip the prepared fire plan, and reassessment and reallocation of air resources are necessary.

Air assets (primarily helicopters) stand by on-call either in the air, or at forward sites. Their targets generally are tanks, other armored targets, and antitank weapons. Some transport helicopters stand by to transport mobile obstacle detachments. Others are available to lay minefields in the path of enemy counterattacks.

In a **meeting battle**, air support assets, especially attack helicopters, screen and support OPFOR units as they maneuver into position. Air strikes attack enemy columns moving forward to reinforce engaged units. OPFOR can also use artillery simultaneously with attack helicopters employing flanking attacks against reinforcing or counterattacking enemy armor columns. Figure 9-7 demonstrates a variant of coordinated helicopter and artillery fire strikes against a counterattacking enemy armor formation. The direct support phase follows the plan prepared before the onset of the offensive. It is an extension of the strong artillery fires associated with OPFOR offensive battles.

In a **pursuit**, air support assets, can ambush withdrawing enemy units along withdrawal routes. Either fixed-wing aircraft or helicopters serve in this capacity. Attack helicopters also support forward detachments outside the range of artillery fire.

DEFENSE

The flexibility and maneuverability of aviation serve many tasks in the defense. In the defense, air support is part of the overall **defensive fire plan** and integrates all available air fire support. It includes air strikes against attacking enemy forces that are out of range of artillery and tactical rockets. The air fire support plan extends throughout the tactical depth of the enemy and seeks to disrupt his attack plans. The commander develops several variants of the plan in detail. These variants take into account the anticipated actions of the enemy and the most probable avenues of approach. Each variant includes an aviation **counterpreparation**. The objective of the counterpreparation is to launch a powerful, surprise, concentrated strike of short duration to preempt the enemy's plan. The targets of the counterpreparation are—

- Artillery in firing positions.
- Aviation on airfields.
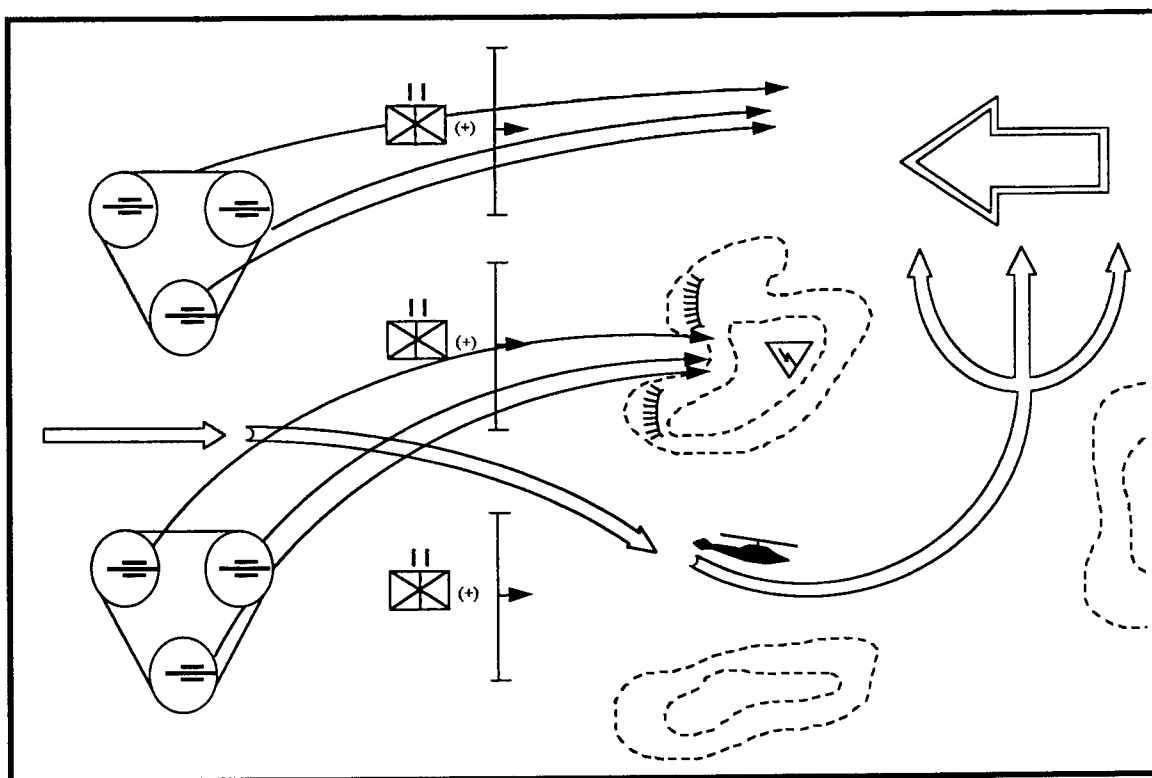
Figure 9-7. Coordinated helicopter and artillery fire strikes against a counterattacking enemy.

9-11

- Armor or mechanized forces preparing to attack.
- Major C^2 centers, headquarters, and communications centers.
- River-crossing sites.
- Equipment, ammunition, fuel dumps, and logistics facilities.

Variants of the plan also provide for--
- Air strikes against attacking forces out of range of artillery and tactical rockets.
- Concentrated fire by all fire support weapons on forces that have reached, or penetrated, forward defensive positions.

Air support in the defense consists of three phases: support of security zone, repulse of enemy attack, and support of counterattacks.

Support of Security Zone

The covering force battle provides opportunities to use OPFOR helicopters, because the enemy presents many targets in the open and has not been able to build a dense air defense system. Helicopters generally operate from forward sites or from ambush positions in this phase. While ground forces are preparing the defense, helicopters reconnoiter likely ambush positions covering the most likely enemy routes. Air delivered mines are very useful in this phase.

Repulse of Enemy Attack

The OPFOR considers this one of the less favorable times to use aviation. Every available direct and indirect fire ground-based system is in action during this phase. Some of them will have to hold their fire as OPFOR aviation approaches the forward edge. It is possible, however, that some air resources re-

main on-call during this phase to provide a quick-reaction strike force wherever the enemy threatens to penetrate the forward defenses. During **withdrawal**, helicopters support rear guard units by attacking advancing enemy units from ambush and by laying minefields.

Support of Counterattacks

The OPFOR considers this an excellent role for air assets. Helicopters provide direct support for the advance of the counterattacking forces. This support can be while the helicopters are on-call in the air or from forward operating sites.

In the defense, the maneuver commander may hold attack helicopters in reserve as a mobile **counterattack** force. Helicopters with antitank-guided missiles (ATGMs) counterattack armored or mechanized forces. They also block major enemy penetrations or supplement mobile obstacle detachments by laying mines along threatened flanks and gaps. The helicopter force seeks routes that allow it to approach the flank of the enemy force undetected. If terrain variations do not provide adequate concealment for the force, it may use smoke to conceal its approach.

TACTICS

The OPFOR emphasizes the importance of deception and surprise. Aircraft approach the target area at the lowest permissible altitude and use minimum radio transmissions. The OPFOR exploits gaps in enemy radar coverage and uses decoy flights to distract enemy air defense systems. If more than one pass is necessary to destroy the target, attacking flights approach the target from different directions or from bright sunlight. This minimizes the effectiveness of enemy air defense, visual detection, and recognition.

9-12

Weather conditions greatly affect aviation operations. Severe weather may be more restrictive on aviation operations than on ground operations. Therefore, planners must anticipate the effects of wind, rain, fog, ice, and snow. Flight planning must consider the weather effects on both enemy and friendly forces.

Helicopter Tactics

Helicopter tactics vary with aircraft capabilities. Most missions are daylight operations, due to night-vision equipment shortages. Primarily, helicopters take advantage of limited visibility occurring at beginning morning nautical twilight and end of evening nautical time. However, limited night missions are possible.

Generally, OPFOR helicopter aviators do not use nap of the earth flying tactics primarily because of limited avionics equipment. They also prefer to avoid air-to-air combat.

OPFOR helicopters are predominately offensive in nature. The tactics used by the pilots flying the aircraft depend on--
- Experience level of the pilot.
- Capabilities and peculiar characteristics of each aircraft.
- Environmental flight conditions.
- Type of operation and aircraft mission.

Planners choose helicopter flight routes which--
- Provide limited detection.
- Avoid enemy air defenses.
- Deceive the enemy about the mission objective.

While enroute to the objective, helicopters use wood lines, ridges, and other terrain relief features for concealment. Helicopters normally do not fly the same route exiting the objective area as entering.

In addition to terrain flight techniques OPFOR pilots use movement techniques when the mission requires more than one aircraft. The OPFOR classifies movement techniques into three categories: traveling, traveling overwatch, and bounding overwatch. (See Figure 9-8.) The most common techniques used by OPFOR pilots are traveling and traveling overwatch.

Helicopters attack as a flight of four or break down into pairs. They can conduct both simultaneous and successive attacks from either one or two directions, depending on the situation and target area. Figure 9-9 depicts **typical formations** and **attack profiles**.

Direct Air Support

Direct air support missions are airstrikes against hostile targets close to friendly forces. These missions require detailed integration with the fire and maneuver plans of supported forces to increase the effectiveness of ground forces. Requests for helicopter support follow the same procedures as the request for fixed-wing support. Direct air support is usually involves a flight of four aircraft using low-level contour and movement techniques. The typical exposure time for an attack is 20 seconds. In the direct air support role, helicopters serve as aerial artillery. Their fires augment ground-based artillery. During direct air support missions, aircraft do not transport ground forces.

TRAVELING

1. Both aircraft move simultaneously and continuously.

2. Aircraft fly at a constant altitude.

3. Aircraft move at a constant rate of speed.

TRAVELING OVERWATCH

1. Lead aircraft moves continuously at contour altitudes.

2. Trail aircraft moves as necessary to overwatch lead aircraft.

BOUNDING OVERWATCH

1. Aircraft fly at contour altitudes.

2. Both aircraft move slowly.

3. Aircraft move one at a time.

- Lead aircraft moves forward under protection of trail aircraft.
- Lead stops and trail bounds forward to new overwatch position.
- Lead moves forward again.

Figure 9-8. Movement techniques.
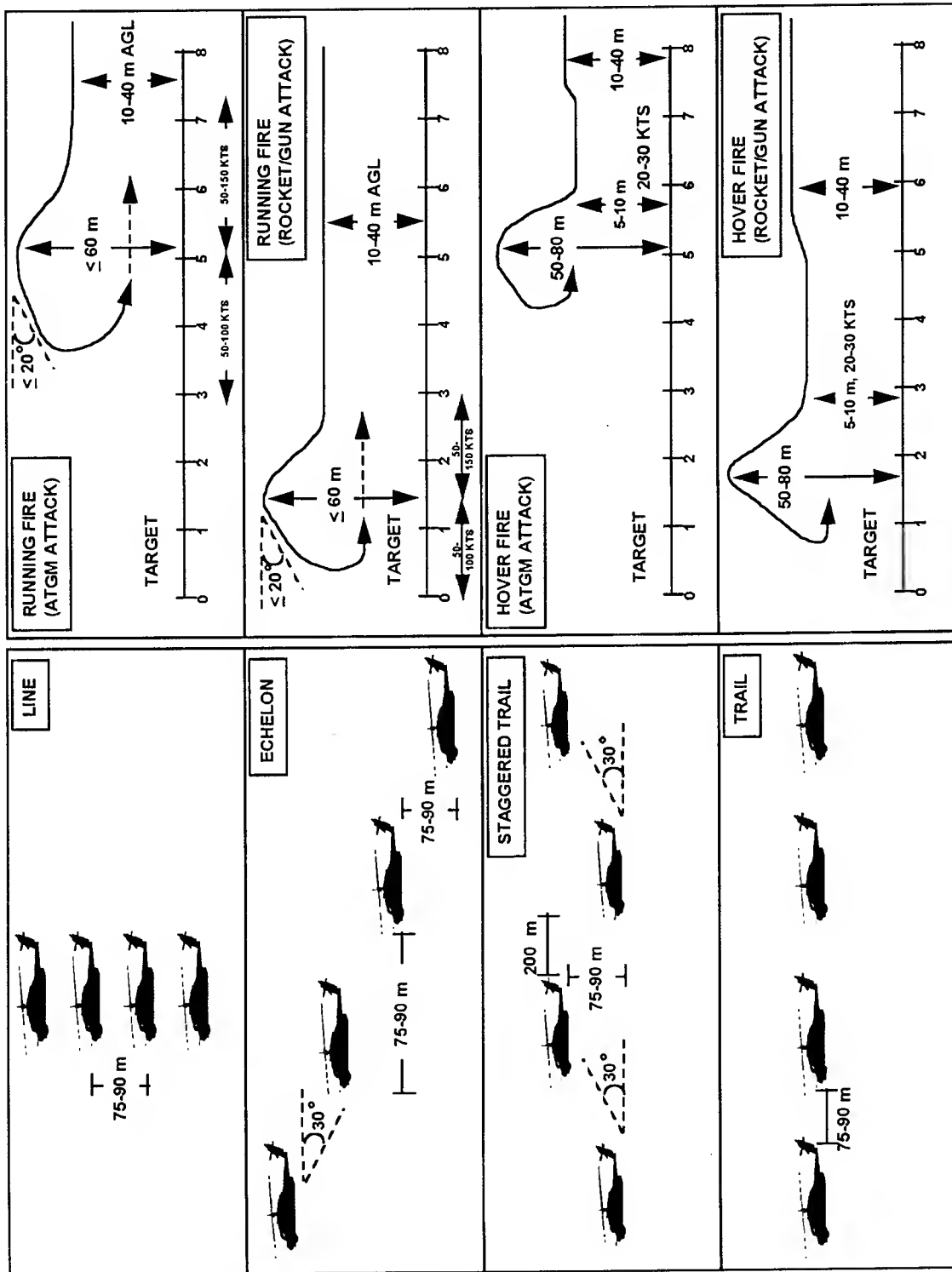
Figure 9-9. Typical helicopter formations and attack profiles.

9-15

Helicopter attacks normally begin with a high-speed, low-level run-in from the initial point (IP) to the attack point (AP) using either running or hovering fire. The speed and altitude for helicopter running attacks vary from 50 to 150 kts (50 to 100 kts for ATGMs) and 10 to 40 meters above ground level (AGL) in contour flight. Upon reaching the AP, the FAC directs the helicopters to climb (not to exceed 60 meters AGL) and acquire the target. Target acquisition occurs at optimum ranges from the target. Weapons selection (3 to 5 km for ATGM; 1,500 meters for rockets) dictates optimum range for target acquisition and engagement. Once they have identified the target, the helicopters execute a shallow dive (not exceeding 20 degrees) towards the target and engage it as directed by the FAC. Upon completion of the maneuver, they execute a descending turn and exit the area at a minimum altitude using terrain masking.

The FAC then directs the flight to return to the same AP, a different AP, the IP, or a refueling point. If more than one pass is necessary, helicopters approach from a different direction. The OPFOR normally conducts helicopter attacks during daylight. Flares enable helicopter attacks during periods of limited visibility. Attacks during limited visibility are the exception rather than the norm.

Although the OPFOR prefers running fire, attack helicopters can use moving hover-fire profiles. Some OPFOR attack helicopters cannot perform a stationary hover. They can only hover in a stationary position for a short period of time, between 15 to 20 seconds. In a moving hover-fire attack, ATGM-armed helicopters use contour flight and terrain masking to close with the target and enter the profile at 50 to 150 kts, 10 to 40 meters AGL. Upon reaching the AP, they hold at an altitude of 5 to 10 meters and a speed of 20 to 30 kts before climbing to the minimum altitude needed to acquire the target (usually about 50 to 80 meters). They fire while maintaining a speed of 20 to 30 kts. The helicopters then maneuver behind covering terrain and exit the area.

Antitank

Antitank missions use two to four aircraft per mission. Helicopters are vulnerable and in jeopardy during the flight time of operator controlled ATGMs. Minimum aircraft exposure times, at maximum effective ranges, vary from 11 to 25 seconds. Helicopters attack using running or moving hovering fire. They may employ 57-mm or 80-mm rockets instead of ATGMs.

Helicopter Landing Zone Security

Attack helicopters normally provide security for transport helicopter landing zones. They do so by--
- Preparing the landing zone.
- Providing armed escort.
- Providing direct air support to the landing force.

The number of helicopters employed depends on the size of the heliborne landing, the degree of protection desired, and the expected enemy resistance.

Fixed-Wing Tactics

The OPFOR does not have sufficient assets to dedicate fixed-wing aircraft to a ground-attack role. Therefore, the use of fixed-wing aircraft in a ground-attack role is minimal. In order to perform direct air support, three conditions must exist:
- Penetration of enemy defenses inbound and on the return leg.
- Correct identification of targets.
- Accurate aiming.

OPFOR fixed-wing tactics stress seeking out and taking advantage of, enemy areas where the counterair assets are spread thinly, and gaps or shadows in radar coverage. Also they desire to route attack forces around strongly defended areas whenever possible. They use all deceptive measures, including electronic combat or flight paths chosen to keep the enemy from readily determining the identity of the actual target. Methods of penetrating enemy defenses vary according to the strength and sophistication of the hostile detection, reporting, C^2 network, and how much intelligence is available about these capabilities.

The **mission profile** chosen for a specific direct air support strike is an important factor. The OPFOR prefers low-level penetrations. (See Figure 9-10.) It rarely uses medium and high-level penetrations. The mission profile normally is hi-lo-lo-hi, with a high-altitude approach over friendly territory at an economical cruising speed. The aircraft then descends to low level for a rapid subsonic penetration. The homeward leg is the reverse.

If it encounters enemy fighters and fuel permits, the low-level egress will be at maximum speed.

Flight profiles, entry (ingress) and exit (egress) speeds, and ordnance release points are fundamental elements of OPFOR fixed-wing tactics. Depending on the type of ordnance used, OPFOR aircraft use a variety of altitudes and ordnance release points to attack a target. The mission, capabilities, and vulnerabilities of the aircraft and ordnance systems determine the tactical employment of fixed-wing aircraft.

Darkness and adverse weather or low visibility degrade the OPFOR's ability of navigating accurately and delivering ordnance on target. Fixed-wing avionics equipment constraints also limit most OPFOR aircraft to day or clear air mass conditions with restricted combat ranges and payload capacity. For the most part, navigation and target acquisition for the OPFOR is visual and detection depends on clear weather. This limits most OPFOR operations to periods of good visibility.
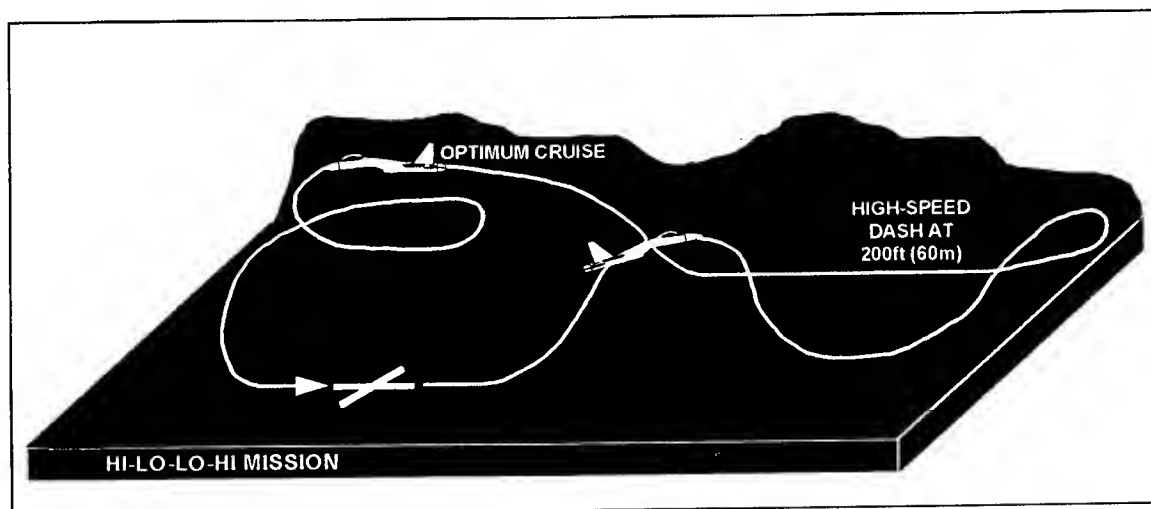
Figure 9-10. Mission flight profiles.

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Chapter 10
Air Defense Support

The goal of the tactical air defense system is to **reduce the effectiveness of enemy air attacks** preventing enemy air action from disrupting the activities of ground forces. To accomplish this, the OPFOR has established an air defense complex incorporating airborne and ground-based weapons systems. The OPFOR stresses the need to prevent the enemy from using his air force to hinder ground actions. Destruction of enemy aircraft is not necessary. Tactical air defense can accomplish its mission if it succeeds at one of the following tasks:

- By forcing enemy aircraft to expend ordnance while they are beyond the effective or optimum ranges of their weapon systems.
- By destroying enemy aircraft when they are within effective range of OPFOR air defense weapons.
- By forcing enemy aircraft to abort the ground-attack mission.

The primary mission of the OPFOR air defense system is to protect the State and OPFOR ground forces from air attack. The air defense system consists of two parts--strategic and tactical. The **strategic** portion consists of assets directly subordinate to the Air Defense Command which protect key areas in peacetime and wartime. Due to the ranges of these systems, forces defending within the State may benefit from their placement. The **tactical** portion of the air defense system consists of air defense units organic to the maneuver forces.

CONCEPTS AND PRINCIPLES

Tactical air defense consists of two basic concepts. First, air defense is an integral part of the ground forces. Second, air defense of ground forces results from the use of weapons and equipment integrated into a coherent air defense system.

Air Defense Phases

Air defense (AD) includes three phases. These phases may overlap, and all three may occur simultaneously. However, only the third phase occurs at the tactical level.

The **first phase** includes all actions taken to destroy enemy aircraft while they are on the ground at airfields or in marshaling areas. Air Force aviation and surface-to-surface missiles, if available, play the major role in this phase.

The **second phase** includes all actions taken to destroy enemy aircraft while in flight, but still at some distance from OPFOR ground forces. Again, Air Force aviation plays a sizable role in these actions, and medium-range surface-to-air missile (SAM) units may also have some role.

The **third phase** involves the destruction of enemy airplanes and helicopters that have penetrated into the airspace of the OPFOR maneuver elements. The third phase primarily belongs to tactical air defense forces.

Tactical Principles

The basic principles that have influenced tactical air defense developments and formed the OPFOR tactical air defense doctrine are the following:

- **Firepower.** The OPFORs use a variety of defense weapons, both missiles and guns. Its force structure provides a significant number of these weapons, with a suitable mix of capabilities, to ground force commanders.

- **Surprise.** The OPFOR is aware of not only the physical destruction that can occur by an attack on an unsuspecting enemy, but also of the psychological effects of violent and unexpected fires on aviation crews. The psychological effects often are only temporary, but they can reduce the effectiveness of attacking air crews at critical moments.

- **Mobility and maneuver.** Mobile tactical air defense systems allow air defense units to maneuver with tank, mechanized, and motorized forces. They can quickly change positions after firing or after enemy reconnaissance detects them.

- **Standoff.** Weapons platforms such as modern attack helicopters can cause significant damage from relatively long range. The range of AD systems provides standoff for the unit being protected.

- **Aggressive action, initiative, and originality.** Air defense commanders realize they must exploit the full capabilities of their equipment if they are to carry out their missions successfully. This demands aggressive action, initiative, and originality on their part. The battlefield is a fluid and volatile environment.

- **Responsive.** Air defense commanders must be responsive to changes in the tactical situation. They must also be aware of changes in the tactics employed by enemy air forces.

- **Coordination.** It is vital to coordinate actions between supported maneuver units and supporting air defense units as well as other air defense units. This principle emphasizes the OPFOR view of air defense as a single system and an integral element of the ground battle.

- **360-degree security.** The OPFOR recognizes that air attack can come from any quarter. For units close to the forward edge, it is not enough to provide security only in one direction.

COMMAND AND CONTROL

The Air Defense Command (ADC), subordinate to the Air Force, has overall responsibility for air defense. Air defense systems organic to maneuver units remain under the command of the maneuver commander but comply with general rules and policies established by the ADC. The ADC declares air defense alert stages, issues weapons systems readiness orders, establishes and defines air corridors, missile engagement zones, free-fire zones, etc. The maneuver commander controls the disposition of organic air defenses and, with the recommendations of his supporting air defense unit commanders, plans for the air defense of his assigned sector. The ADC determines identification friend or foe (IFF) and airspace management control procedures. For more detail on the organization and functions of the ADC, see Chapter 7, *Light OPFOR Operational Art Handbook.*

Airspace Management

The OPFOR considers airspace management the most complex aspect of air defense functions. The division of airspace among the air defense systems concerns the commander because of the variety of air defense weapons in the OPFOR inventory. The ADC is responsible for airspace management issues and procedures. Coordination between fighters and ground-based air defense systems is necessary. This coordination requires either establishing zones of responsibility that define the airspace both horizontally and vertically, or assigning specific targets to specific weapons. The latter is probably only applicable in a low-intensity air environment such as a conflict with neighboring states.

Safe Corridors

Typically, OPFOR airspace management procedures fall into the "if it flies, it dies" category. OPFOR aircraft and helicopter have designated ingress and egress corridors through ground-based air defense sectors for specific time periods. This coordination allows the safe passage of OPFOR aircraft operations beyond the forward edge of OPFOR ground forces. In conjunction with these corridors, the OPFOR may designate time periods in which AD units refrain from engaging aircraft unless directly attacked. It may also establish time periods to fire on all aircraft or on no aircraft. If it does develop and disseminate such control measures in advance, AD units hold fire on all aircraft in the sector (unless attacked). Holding fire when control measures are absent ensures the safe return of OPFOR aircraft. Even with this simple "switch-on" (die)/"switch-off" (fly) policy for ground force's weapons, the OPFOR is still likely to engage its own aircraft. The OPFOR prefers to engage some of its own aircraft rather than

low enemy aircraft to penetrate OPFOR defenses and attack the State.

Zones of Responsibility

Another method the OPFOR uses for airspace management is the establishment of a boundary parallel to, and well beyond the ground forces' forward edge. This boundary is beyond the range of national-level SAMs. Ground-based air defense systems would engage aircraft out to this boundary. Fixed-wing aircraft engage the enemy beyond this boundary.

Alert Status

Maneuver commanders plan 360-degree air defense coverage. They must consider how their air defense planning affects not only the battle in their sector, but adjacent sectors as well as rear area protection. In his sector, the commander may order a higher state of air defense alert or a more restrictive readiness status than that issued by the ADC. Under no circumstance can he relax the proscriptions of the ADC. Air defense units organic to maneuver forces monitor the air defense early-warning network to maintain current information on air threats affecting their sector and for changes in the alert status. In the event of a communications failure or the destruction of the national Air Defense Control Center, all air defense systems would engage any aircraft positively identified as enemy.

RECONNAISSANCE

The OPFOR concept of reconnaissance in air defense includes **airspace surveillance** and **evaluation of terrain** suitable for weapon positions. Continuous surveillance of the surrounding airspace ensures current data on the enemy air situation.

Intelligence Requirements

Air defense units divide the intelligence information needed into two basic categories. The first category represents data needed to plan and organize **air defenses**. It includes all data required to make a determination of probable enemy courses of action. Typical information in this category includes the following:

- Composition and strength of enemy air forces.
- Technical and combat capabilities of enemy aircraft.
- Basic methods of tactical employment of enemy aircraft.
- Locations of airfields, command and control (C^2) centers, and air logistics depots.
- Avenues of air approach.

The second category is **data required to conduct the air battle**. It includes all information necessary to determine the enemy's plans, air order of battle, and strike objectives as well as the exact location, numbers, direction, speed, and altitude of enemy aircraft in flight. Developing the first category of information is the joint responsibility of all intelligence activities. The detection, surveillance, and intercept control of enemy aircraft are the specific responsibility of air defense reconnaissance elements, particularly air defense radars.

Terrain Reconnaissance

The commanders of the supported unit and the supporting air defense element conduct terrain reconnaissance in defensive areas to tentatively identify positions for air defense weapons. They try to locate positions along routes of march or in areas they feel the advancing OPFOR could seize. The OPFOR stresses identification of all potential attack routes for enemy aircraft. Routes of approach suitable for attack helicopters and positions from which these helicopters can employ anti-tank guided missiles (ATGMs) are of special concern.

Air Surveillance

Continuous surveillance of the surrounding airspace ensures current data on the enemy air situation. The goal of the ADC is to establish an air surveillance network that ensures the earliest warning of air attack. Air surveillance is by electronic and electro-optical means and by visual observation.

Visual Reconnaissance

OPFOR technical reconnaissance improvements have not reduced the importance of visual reconnaissance. Commanders have learned that an effective visual surveillance system often provides the first warning of an enemy air attack. All units close to enemy forces or in areas where enemy air attack is likely have posted air observers. They conduct visual air surveillance on a 360-degree basis. According to the OPFOR, an observer can detect aircraft at ranges from 2 to 5 km when he is using a 60-to 90-degree sector of observation. The OPFOR feels an observer with a 30-degree sector can detect aircraft at ranges of 6 to 7 km. Of course, terrain and visibility affect these distances.

Radars

The OPFOR also uses **electronic observation** to conduct air surveillance, with radar providing an all-weather detection capability. When possible, higher-level radar units pass information about enemy air targets to air defense commanders and their firing batteries. This reduces the vulnerability of lower-level battery radars, radar-equipped antiaircraft (AA) guns and SAM systems to enemy electronic countermeasures.

Types. The OPFOR has limited but effective **radar surveillance** and **fire control systems**. Its radars fall into two general categories, **surveillance** and **fire control**. Surveillance radar types include target acquisition, and height-finding. These radars are organic to all infantry divisions, and military district AD regiments. Only self-propelled (SP) SAM units have height-finding radars. Some fire control radars also have a limited target acquisition capability, and are found in both mechanized and motorized infantry divisions. OPFOR radars work as a system rather than as separate units.

Division target acquisition radars detect and monitor the targets. Most target information comes down from division level. Radars provide the necessary data for engagement. They attempt to do this without unnecessarily exposing the air defense firing battery and radar to detection by enemy forces.

Survivability. The OPFOR is well aware of the technical advances in the developments of enemy ECM and radar-homing ordnance. Radar personnel receive training in countermeasures against enemy aircraft that use chaff, jamming devices, and radar-homing weapons.

OPFOR air defense units employ the following measures to combat the effects of ECM:

- The radars of the SAM and AA systems that move forward to cover an OPFOR attack remain silent until after the attack begins.
- Each of the air defense systems operates within separate radar frequency bands.
- OPFOR tracking and guidance radars change frequencies to overcome jamming.
- Some OPFOR systems work on pulsed radar; others work on continuous wave. Some radar tracking systems also possess

optical tracking for continued operations in a high electronic combat (EC) environment. Other systems use infrared homing.

Target Identification and Warning Network

Information on enemy aircraft passes over the target identification and warning network, as well as over the command and support radio networks when necessary. Most target information originates at military region-level air defense control centers and flows down to the military districts, divisions and brigades. This allows commanders to select the best weapon to engage a particular target. Ideally, only positively identified enemy aircraft would come under fire. Air and air defense control centers and aviation C^2 facilities locate together whenever possible to provide the highest degree of coordination between air defense and aviation activities.

AIR DEFENSE WEAPONS

There are air defense weapons at nearly every level of command. As with its other weapon systems, the OPFOR has incorporated technological improvements into its air defense weapons. In addition, the OPFOR has market access to a variety of improved air defense missiles, and AA guns. However, the overall effectiveness of their current AD weapons is satisfactory. The OPFOR has a variety of air defense weapons within its tactical maneuver forces. These include AA guns and surface-to-air missiles SAMs. Some of these systems are self propelled SP to match the mobility of the forces they support. These tactical air defense systems include--

- Towed AA guns (such as the 23-mm ZU-23 in brigades or the 57-mm S-60 at higher levels).

- SP AA guns (such as the 23-mm ZSU-23-4).
- Shoulder-fired SAMs (various models).
- SP SAMs (such as the SA-8).

Commanders select the weapon system to best engage a given target.

ORGANIZATION

The OPFOR employs various organizations for its air defense. The types of AD organizations found in military districts, infantry divisions, infantry and tank brigades, and infantry and tank battalions follow.

Military Districts

Most of the better equipped military districts have an organic air defense regiment. This regiment has one battalion with medium-altitude SP SAMs, and one battalion equipped with towed AA guns. (See Figure 10-1.) Each air defense regiment has shoulder-fired SAMs assigned for point defense. Generally, the missions of these units are to augment maneuver brigade air defenses in the forward areas and to engage and destroy any aircraft that get through brigade defenses and threaten command and support elements. The mixed deployment of SAMs and AA guns gives the military district commander an organic means to establish a local area defense.

Infantry Divisions

Every OPFOR division contains an AD regiment. The AD regiment shown in Figure 10-2, equipped with towed AA guns, is part of both light and motorized infantry divisions. That type of AD regiment has a total of four batteries. The mechanized infantry division, on the other hand, would have a different type of AD regiment with one battalion of SP SAMs (two batteries) and one battalion of towed AA guns (three batteries). (See Figure 10-1.) The regiment can provide cover for the entire division area, with limited overlap into flanking divisions' areas. It concentrates on defending, in general order of priority --

- The division command post.
- Main-axis maneuver units.
- Division artillery group.
- Division logistics.
- Second echelon and minor-axis units.
- The AD regiment's own logistics tail.
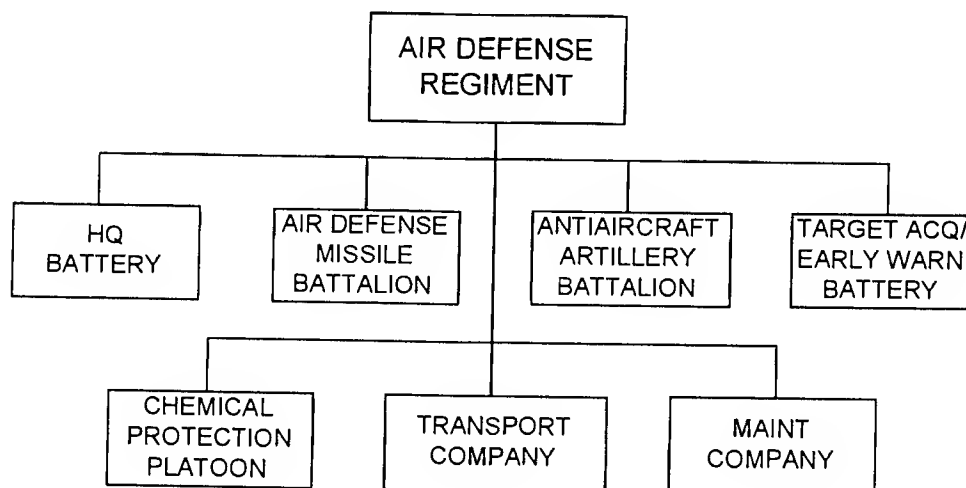
Figure 10-1. Air defense regiment, military district or mechanized infantry division.

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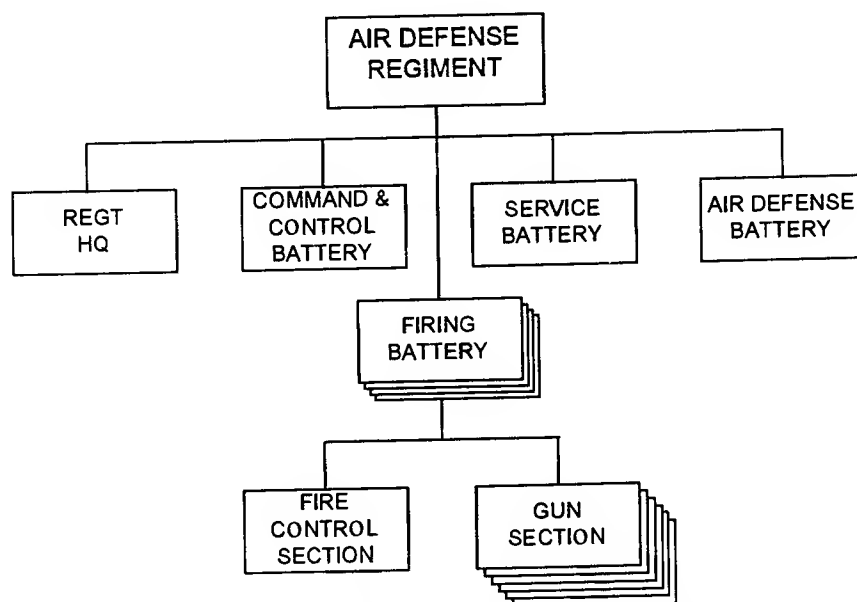
Figure 10-2. Air defense regiment, motorized or light infantry division.

Typically, two or three batteries of an AD regiment deploys forward with the first-echelon brigades, coming as close as 5 km to the forward edge, with the remaining batteries protecting other OPFOR units. If the battle becomes highly mobile and fragmented, or if maneuver units such as an infantry battalion acting as a forward detachment have independent missions, division air defense assets can deploy under the command of maneuver units. The more flexible SP SAM systems operate in pairs or individually for specific missions, such as ambushes.

Infantry and Tank Brigades

In addition to the AD regiment at division, each infantry brigade also has organic air defense. Each mechanized infantry or tank brigade has an AD battery consisting of two SP AA gun platoons. Both the light and motorized infantry brigades have an AD battery with two platoons of towed AA guns. Either type of platoon consists of two sections of two guns each.

Infantry and Tank Battalions

A mechanized infantry battalion has a SAM platoon with three squads of shoulder-fired SAMs. Motorized and light infantry battalions have a similar platoon as part of their weapons company. The SAM platoon usually deploys by squads to cover first-echelon companies and the battalion command observation post (COP). The squads move behind the companies they are supporting. Regimental or divisional assets can also reinforce the battalion's SAM platoon.

Tank battalions have no air defense unit. Their only dedicated protection from air attack is AA machineguns mounted on tank turrets. However, special-purpose antihelicopter HE rounds with variable-time (VT) fuzes are available for tank guns. These rounds and standard HE fragmentation rounds with VT fuzes may also be available to the OPFOR. Tanks for instance, could fire a platoon volley of VT-fuzed fragmentation rounds, with each round set for slightly different setting for an airburst against approaching enemy helicopters. A direct hit or near miss with this tactic

could destroy the helicopters. When encountering enemy helicopters, OPFOR tanks fire whatever round happens to be loaded at that time. If time permits, they follow-up with a more appropriate type round. Further, tank, as well as IFV, and ATGM gunners routinely receive training in gunnery against helicopters.

SUPPORT OF THE MARCH

The OPFOR anticipates that enemy attack helicopters may conduct heavy attacks on march columns. Division air defense weapons and the brigade's own organic air defense weapons protect the moving brigades. Air attack is more likely at chokepoints, such as bridges, mountain passes, and urban areas.

Infantry Brigades

Air defense weapons play a major role in the defense of units making tactical marches. When the air threat is high, air defense elements supporting a maneuver unit usually move as a part of the unit, integrated into the march column. This is particularly true of the SP AA guns, such as those belonging to mechanized infantry brigades. While one or two pairs SP AA guns may protect units on the march, the use of all eight SP AA guns is the rule. Pairs of SP AA guns are 1,000 to 2,000 meters from each other to ensure mutual support. Individual guns maintain at least 50 meters between themselves and other vehicles to ensure an unobstructed field of fire to engage low-flying aircraft.

Shoulder-fired SAMs provide the primary air defense for motorized and light infantry brigades on the move since their towed AA guns generally lack the ability to shoot on the move. During movement, shoulder-fired SAM gunners engage low-flying targets under the direction of their company commanders. Shoulder-fired SAM gunners have specific sectors of observation and fire to preclude several gunners engaging one target while additional targets may approach unchallenged from other directions.

Infantry Divisions

When the threat of air attack is high, or when the commander directs, the mechanized infantry division's SAM battalion of the AD regiment protects the march columns. These weapons provide medium engagement envelopes. The SAM capabilities can have a great impact on enemy aircraft that use limited-range, standoff weapons. The SAM batteries can also protect columns moving up from the rear.

Air defense batteries from the SAM battalion relocate as necessary to provide continuous and effective protection to the supported brigade. OPFOR commanders maintain protection by leaving at least one battery in firing position to cover for the one(s) moving. Air defense elements reinforcing a maneuver brigade usually move as a part of that unit.

Air Surveillance

All vehicles in a march column have designated air observers. Air defense elements deployed to cover the column are ready to engage targets at all times. They do not use radar to identify targets unless the requirement for use outweighs the risk of detection. This reduces the likelihood that enemy electronic intelligence will detect the column. Additional radars from the division's air defense regiment can provide increased radar coverage.

SUPPORT IN OFFENSE

Unless protected, ground forces engaged in an attack may be subject to intense air attack. They may have to maneuver and fight with minimal cover, concealment, and camouflage. The enemy relies heavily on air power to destroy these formations because they are lucrative targets. As a result of this vulnerability, the OPFOR stresses the criticality of air defense cover during the attack.

For example, an infantry brigade in the division's first echelon usually receives additional AD support from the division's AD regiment. Such assets would join the supported unit in pre-attack assembly areas. They provide cover while in the assembly area, on the march, and during the attack. Upon commitment of the division's second echelon or reserve, priority of air defense shifts to those forces.

Antiaircraft guns and SAMs normally deploy at distances of one-third to one-half their effective range behind the troops being supported. They set up to provide interlocking and mutually supportive fields of fire with separation distances to reduce the likelihood of their simultaneous destruction by conventional weapons. Gunners for shoulder-fired SAMs ride with the infantry in mechanized, motorized, and light units.

Divisional or district air defense elements supporting attacking brigades maintain communications with the brigade air defense unit and the AD regiment from the division or military district. They also monitor the air defense target identification and warning network. These communications links provide the firing units with information regarding the probability of air attack.

The OPFOR expects ground force air defense weapons to fully support fast-moving mechanized and motorized infantry forces in the offense. If necessary, some mobile systems from higher echelons may deploy to provide support.

Deployment Patterns

Guidelines for the deployment of air defense units supporting an attack depends on an assessment of the air threat, terrain, tempo of supported formations, and mobility of supporting systems. These guidelines should take into account variables such as whether the assessment of the air threat is low or high, sporadic or continuous. If the supported unit attacks on a broad frontage, the AA guns or SAMs usually deploy in a line formation to protect dispersed elements of the formation. If the unit attacks on a narrow frontage, the air defense systems deploy in column, thus providing increased concentration of fires.

In an attack, the exact **location of tactical air defense weapons** depends on--

- The mission of the supported unit.
- The commander's chosen combat formation.
- The terrain.
- Fields of fire and observation.

The OPFOR expects ground-force air defense weapons to fully support fast-moving mechanized, and motorized infantry forces in the offense. If necessary, some mobile systems from higher echelons may deploy to provide support. The OPFOR has an adequate air defense system to protect the attacking maneuver units.

The failure of AD weapons to keep up with the advance is likely to lead to holes in the air defense umbrella. This is particularly likely in a high speed advance.

Division and District

The mechanized, motorized, and light infantry divisions and some districts have organic AD regiments. These AD regiments have systems that can provide adequate protection to the entire division.

Divisional or district AD elements supporting attacking brigades maintain communications with the brigade AD unit and the AD regiment from the division or military district. They also monitor the AD target identification and warning network. These communications links provide the firing units with information regarding the probability of air attack.

The employment of the division AD regiment depends to a large degree on the type of weapons they possess. Air defense regiments equipped with the towed AA guns cannot provide comprehensive coverage of the entire division simultaneously. They are capable of only a limited area coverage and are much better able to protect individual locations. Single towed AA gun batteries can augment the AD weapons of selected maneuver brigades or protect selected sites such as river crossings or command posts. Within its range capabilities, the towed AA gun is an extremely lethal weapon.

Air defense regiments equipped with the SP SAMs are capable of a true area defense. They can include all elements of the division within their engagement envelopes. Typical employment of the regiment's two missile firing batteries might involve one battery providing support directly to each first-echelon maneuver brigade. The remaining platoons provide protection for the division headquarters, and artillery units. Maneuver units to the rear of first-echelon brigades benefit from the protection provided by the first-echelon brigade's organic AD weapons and the missile batteries directly supporting them.

The range of the SP SAM allows the missile systems to deploy several kilometers behind the forward edge, thus reducing their exposure to enemy ground-based weapons. From these positions, the missile batteries can still engage targets well beyond the forward edge.

High expenditure rates of very bulky ammunition, such as in the case of SAMs, can cause problems in resupply. This is particularly likely in the event of failures in the centralized C^2 system and/or if EC is very effective. This could force SAM units into firing salvoes to engage targets rather than single missiles.

Maneuver Brigade

Support of the OPFOR maneuver brigade involves the most complex air defense actions. As the supported unit performs its assigned missions, it continuously changes its location and combat formation. The ADC must respond to these changes, redeploying his own weapons to provide continuous and effective protection to the brigade's elements.

Allocated Assets

The division or district allocates more AD units to support maneuver units in areas where the threat is the greatest. For example, one or more batteries of the division's AD regiment usually provide additional AD support to brigades in the division's first echelon.

Allocated SP SAM batteries do not have to deploy in the maneuver brigade's formation. The range of their radar and missiles allow them to provide support to the first echelon from locations farther to the rear. The location of these missile batteries also increases their survivability by reducing the chance that enemy ground fire or aircraft will destroy them.

Organic Assets

Brigade organic AD assets consist of an AD battery. Typical employment of brigade AD assets includes allocation of two, or four towed AA guns to protect the brigade's first-echelon battalions. One platoon consists of four towed AA guns These towed AA guns normally deploy in pairs, for both effective command and control and mutual support. Individual systems frequently keep within several hundred meters of one another. When employed as a platoon, towed AA guns usually deploy in pairs approximately 1,500 meters apart, again insuring mutually supporting fires.

A second-echelon battalion of a brigade locates several kilometers behind the forward edge of the enemy's defense and usually does not have attached AD elements until committed. It benefits from the efforts of all AD elements located to its front.

Motorized Infantry Battalion

The towed AA guns from the motorized infantry brigade's AD battery support a motorized infantry battalion attacking in the brigade's first echelon. (Figure 10-3.) In his combat order, the brigade commander tasks a pair of towed AA guns to support a particular battalion for a specified period. This period can precede the attack and begin before a battalion moves into an assembly area. In this case, the AD element provides protection to the battalion during the road march to the assembly area. The towed-AA gun pair or section may join the maneuver battalion after it is already in the assembly area. However, the OPFOR prefers to haveoth units arrive at the assembly area at the same time. In either case, the AD section or platoon leader reports to the maneuver battalion commander and establishes direct communications.

The platoon maintains communications with the brigade AD battery and the divisional AD target identification and warning network. This communications system provides information on the tactical air situation. The maneuver battalion commander and the towed AA gun section or platoon leader work to integrate their weapons into an effective AD plan. As the battalion occupies the assembly area, AD weapons deploy according to this plan.

If the maneuver battalion attacks on a broad frontage, groups of two towed AA guns usually deploy in a line formation protecting dispersed elements of the supported battalion. When attacking on a narrow frontage, the two towed AA guns deploy in column, providing greater control and increased concentration of platoon fire. A single battalion attacking on a very narrow frontage may have only one towed AA gun.

When two maneuver battalions attack on line in the first echelon of a brigade, a pair of towed AA guns normally supports each one. The towed AA gun pairs remain within mutually supporting range but are far enough apart to reduce the chances of being hit simultaneously. The two guns of each pair are usually from 150 to 250 meters apart, ensuring adequate freedom of fire to engage low-flying targets.
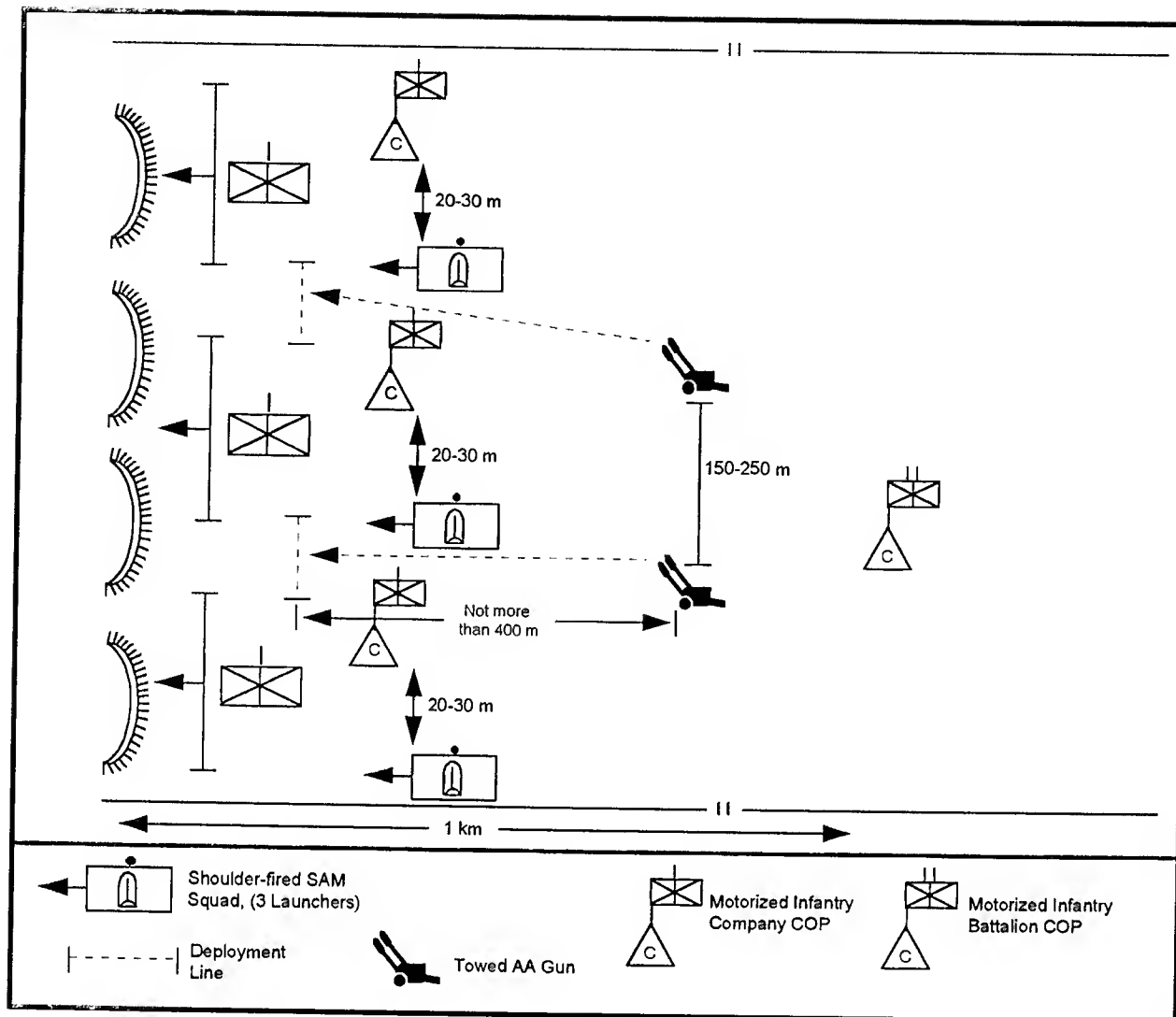
Figure 10-3. Air defense of motorized infantry battalion in attack
against defending enemy (example).

To attack the battalion in its assembly area, enemy aircraft must first penetrate the engagement envelopes formed by batteries of the division's AD regiment. The attacking aircraft then come within range of the brigade and battalion defense systems. The brigade's towed AA guns engage enemy aircraft immediately as they come within range. The battalion's shoulder-fired SAM gunners engage enemy aircraft that maneuver to avoid towed AA gun fires and pass over the SAM firing positions. Normally the shoulder-fired SAM platoon remains directly subordinate to the battalion commander. However, its squads can deploy in company strongpoints, as well as near the battalion COP, to provide AD for the entire battalion defense area. Finally, small arms and vehicle-mounted weapons engage enemy aircraft that pass over the maneuver battalions' positions.

Motorized Infantry Company

The shoulder-fired SAM squads of the motorized infantry battalion may attach to each of the three motorized infantry companies to supplement the coverage that an allocated towed AA gun section or platoon provides. The gunners of one company's allocated SAM squad may be near a towed AA gun section. The towed AA gun section or platoon leader can have some degree of control over these gunners in this situation. Generally, the SAM gunners locate to positions filling the gaps in AD coverage.

Shoulder-fired SAM gunners ride in trucks until the infantry dismounts. The gunners then dismount and accompany the motorized infantry troops. One SAM squad usually reinforces each first echelon motorized infantry company. The three SAM gunners in a SAM squad deploy in a group, within 20 to 30 meters of the company commander and 15 to 20 meters from each other. This system offers greater control and increases the chances of a target's destruction. It also reduces the possibility of firing on a friendly aircraft.

Meeting Battle

Basic employment techniques for air defense weapons in a meeting battle and attack against a defending enemy are very similar. The towed AA guns of the air defense battery are usually in a brigade's advance guard. Any reinforcing elements from the division's AD regiment most likely remain with the maneuver brigade's main body. The SAM gunners in infantry battalions stay ready to engage targets in their sectors of observation and fire.

Pursuit

The motorized infantry brigade's AD elements, or possibly a battery from the division's AD regiment, can augment a motorized infantry battalion in a pursuit. Air defense during pursuit is especially important since the enemy can use air power to reduce the rate of advance and the strength of pursuing OPFOR forces.

SUPPORT IN DEFENSE

The allocation of air defense assets supporting the defense closely parallels that of the offense. The OPFOR recognizes some differences in the nature of air threats to forces engaged in the defense. The principle threat to troops engaged in the offense is from air strikes by low-flying ground-attack aircraft and armed helicopters. However, troops in the defense also face additional threats from aerial reconnaissance and air assaults.

The OPFOR must coordinate fires between all AD units and supported maneuver units. This coordination requires a comprehensive defensive fire plan that provides an integrated AD network. Air defense units provide coverage to all levels of the organization and integrate this coverage with the defensive ground battle to ensure continuous air defense.

Deployment Patterns

The positioning of AD assets depends primarily on air avenues of approach. Air observation posts locate on terrain affording good visibility or along approach routes. Sectors of observation and fire need to provide 360-degree surveillance of the airspace surrounding the defensive area, because air attack can come from any direction.

Maneuver Brigade

The OPFOR believes that the battalions in a division's defending first-echelon brigades are priority targets for attacking enemy aircraft. To defend these battalions, brigade AD weapons deploy well forward, with the two towed AA gun platoons or sections usually supporting first-echelon battalions. If the air threat is great, maneuver brigades can have batteries of the divisional AD regiment allocated for support. The remaining AD batteries protect the division's main command post, and artillery units.

Second-echelon maneuver brigades develop their AD plan in coordination with the division's chief of air defense. It is also likely that any unassigned AD assets of the division will locate in the defensive sectors of these second-echelon brigades. In all cases, second-echelon brigades employ both active and passive AD measures. These measures include--

- Establishing air OPs.
- Planning SAM, AA gun, and massed maneuver unit fires.
- Employing camouflage measures.

Motorized Infantry Battalion

In the defense, the maneuver battalion commander has overall responsibility for the organization and conduct of air defense by his battalion and any attached elements. The brigade air defense battery commander normally orders a towed AA gun section, or platoon, leader to provide protection to a specific maneuver battalion or battalions for a given period of time. During this time, the section or platoon leader reports directly to the maneuver battalion commander. The section or platoon leader also maintains communications with his battery headquarters and the division's air defense target identification and warning network.

When the section or platoon leader reports to a maneuver battalion commander, he receives the battalion's mission and disposition and the commander's tactical defense plan. The commander may give him additional instructions, and they may conduct a joint terrain reconnaissance. The section or platoon leader identifies likely approach routes for enemy aircraft, paying special attention to those suitable for low-flying aircraft and helicopters. He also reconnoiters positions for AD weapons.

The shoulder-fired SAMs of the infantry battalion may employ as a platoon under the direct control of the battalion commander. These SAMs deploy near the battalion COP so that the battalion commander can control their fire by voice and visual signals in the event of radio communications failure. In some situations, such as in a prepared defense, the brigade commander may direct and control the employment of the SAM gunners. In that case, these gunners form a composite fire element under the control of the commander of the brigade's AD battery.

In the defense, as in other combat actions, the towed AA guns can deploy in pairs, or sections. The pairs of guns are 1,000 to 2,000 meters apart. Positions for the towed AA guns are usually well within a battalion's defense area. (See Figure 10-4.) This protects them from enemy observation and direct ground fire and allows better protection for the entire battalion. Air OPs are in the battalion rear area and at the battalion COP. The towed AA guns section or platoon command post is usually near the battalion COP.
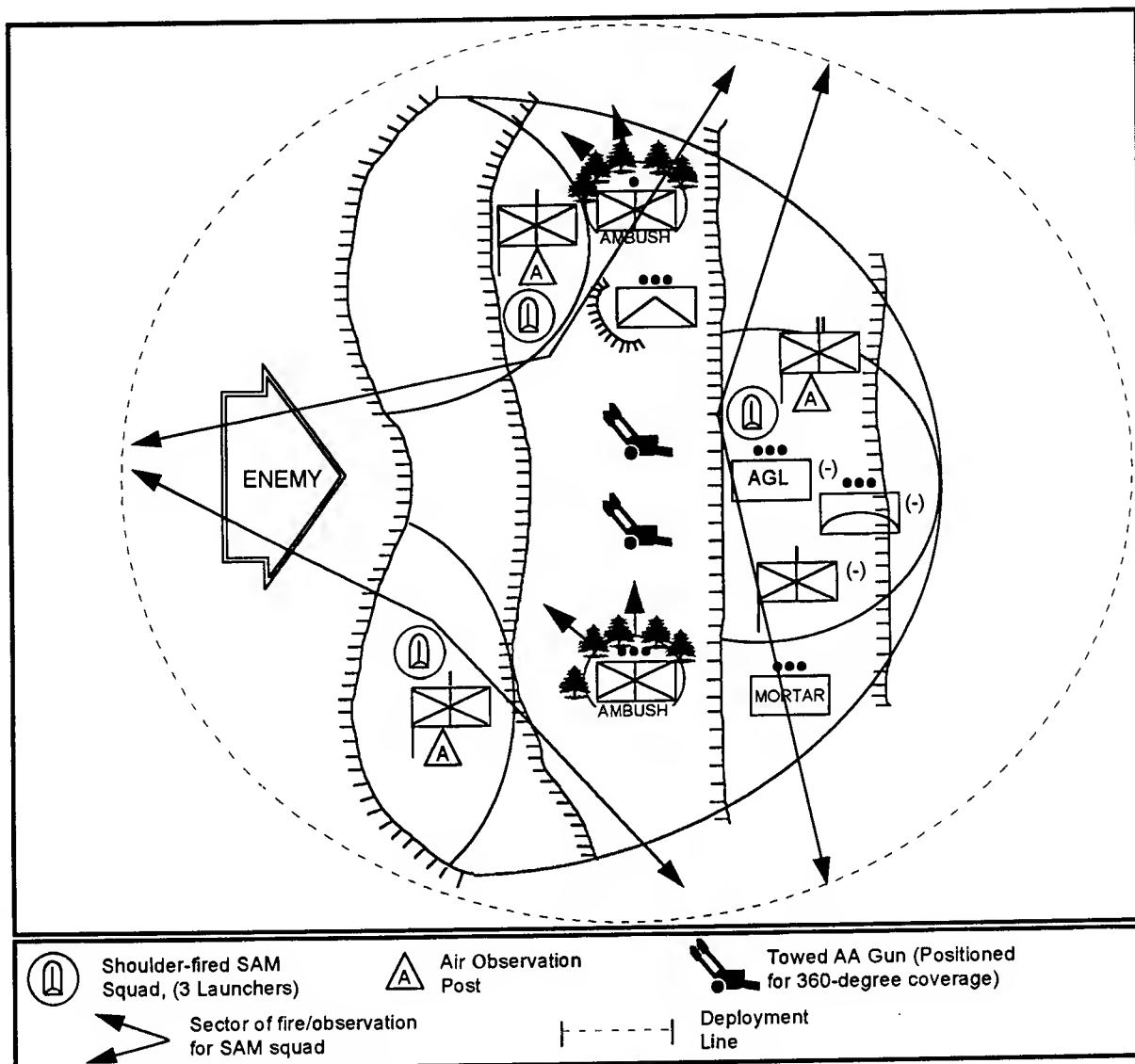
Figure 10-4. Air defense of motorized infantry battalion in defense (example).

The battalion's AD capabilities are only part of an overall AD fire plan. The battalions' primary preparation is against low-flying aircraft capable of penetrating the air defense network and attacking the battalion. In the conduct of the defense, the OPFOR prefers to engage enemy aircraft prematurely and waste some ammunition as opposed to waiting to fire later thus allowing the aircraft to expend its ordnance. The OPFOR continuously fires on aircraft as long as the aircraft remain in range.

On a priority basis, the OPFOR engages aircraft posing the greatest threat. The preferred technique is to continue to fire at an already engaged target rather than to switch from target to target. This continues unless a later acquired target threatens AD elements. Air observers and weapon crews outside the attacked sector maintain observation and readiness to fire. This prevents enemy success through simultaneous air attacks from several directions.

Motorized Infantry Company

Battalion AD preparations begin at the company level. Each company strongpoint has an air observation post close to the COP. These OPs are on terrain with good visibility and usually on likely routes of enemy air approach. They cover designated sectors to maintain 360-degree observation of the airspace surrounding the battalion's defense area. Each motorized infantry company strongpoint has firing positions for the shoulder-fired SAMs allocated from the parent battalion. These positions often colocate with air OPs near the perimeters of the companies' position, extending the engagement envelope as far as possible.

SPECIAL MISSIONS

Commanders employ special techniques to increase flexibility and effectiveness in their air defense plan. Among these are **air defense ambushes** and **roving air defense elements**. Air defense elements for both of these techniques are similar in organization and usually consist of one or more AA guns or SAMs.

Air defense ambushes and roving units cover gaps in OPFOR air defenses. They provide air defense coverage on likely approach routes of enemy aircraft. Both techniques can deceive the enemy as to the disposition of other AD elements. These tactics are especially valuable when AD assets are in short supply or inadequate.

An SP AA gun with its mobility, onboard radar and high rate of fire, is especially appropriate for both ambushes and roving units. However, this weapon is organic only to mechanized infantry and tank

brigades. When necessary, radar elements of the divisional AD regiment can support a unit operating from ambush. Except for self-defense, AD assets engage only those targets that approach on the designated route. The units reposition themselves immediately after engagement or on discovery by the enemy.

Ambushes

Units conducting air defense ambushes normally maintain radio silence and rely on external sources for early warning information. They monitor their radios to receive tip-offs about incoming aircraft from active target acquisition radars. The tip-offs may provide type, altitude, direction, and speed. Once it knows the altitude, direction and speed, the ambush unit can determine when to activate its organic radar. Its radar scans only long enough to engage the enemy. If the ambush unit does not have the capability to receive tip-offs, it may rely on visual means to acquire the aircraft.

Roving Units

· Roving AD elements function much like the ambushes. There is, however, one difference. Unlike an ambushing unit which lies in wait for approaching enemy aircraft, a roving unit moves to the most likely areas of enemy air attack. There it occupies a series of designated positions in the supported unit's area. The roving unit occupies these positions according to a prearranged schedule or on order of the air defense commander. Ambushing and roving units terminate their operations and return to previously designated primary firing positions upon direction of their parent unit commander.

Chapter 11
Engineer Support

The OPFOR recognizes that engineer support is vital for the successful execution of combat. Due to the fluid nature of modern combat, effective engineer support is essential for ground forces to maintain a high tempo. Additionally, the OPFOR values engineer support as a significant combat multiplier for combating invasions by stronger military powers from outside the region.

Engineer tasks are a shared responsibility throughout the OPFOR. For instance, combat troops, as well as engineers, perform mine warfare tasks such as minelaying, minefield recording, and mine removal or breaching. Engineer and combat personnel also perform survivability tasks such as constructing fortifications, clearing fields of fire, and camouflage. The same is true for river crossing tasks where some units and equipment can ford, swim, or snorkel across with little or no engineer support. Although the highest level of engineer training and the greatest technical capabilities exists in the engineer troops, all military personnel and units train to some degree in fundamental engineer tasks.

Additionally, the OPFOR is issuing newer equipment to some maneuver units to enhance their ability to perform some of these tasks. The intent is to make the force as flexible and capable as possible while minimizing dependence on limited engineer support. This allows the maneuver force to autonomously execute rudimentary or basic engineering tasks. It also frees the engineer troops to--
- Perform engineer-specific or critical tasks supporting the maneuver commander's imperatives.
- Exploit and expand successful engineer effort begun by the combat troops.
- Support units that have little or no engineering capability.

ORGANIZATION

The OPFOR classifies engineer troops as "special" troops. They carry out unique functions for all elements of the ground forces. At the tactical level (district, division, and below), a chief of engineers (COE) is a key member of the commander's staff. In the absence of the COE, the senior engineer commander is responsible for planning the employment engineer assets. The maneuver brigade is the lowest level with an organic engineer unit. This unit, an engineer company, supports all brigade efforts. Under certain circumstances, the brigade commander may require some of these engineers to support his subordinate maneuver battalions for a specific mission.

There are two basic types of engineers: combat engineers and special-category engineers. Combat engineers perform tasks that can require direct contact with the enemy, while special-category engineers do not normally engage the enemy. Together, these engineers perform the engineer support missions necessary for the OPFOR to succeed on the modern battlefield.

Engineer troops form elements of higher organizations--(national, regional, district, divisional, and brigades). These elements range in size from engineer brigades to sections (squad-sized).

Divisons and Districts

Mechanized infantry divisions have an engineer battalion composed of--
- A combat engineer company.
- An assault crossing company.
- A construction company.
- A road and bridge construction company.
- A pontoon bridge company.
- A engineer reconnaissance platoon.
- A signal platoon.
- A battalion headquarters.
- Maintenance and material support platoons.

Motorized and light infantry divisions have an engineer company with--
- A mine warfare platoon.
- A bridge platoon.
- A construction platoon.
- A company headquarters.

Districts may have either an organic engineer battalion or company.

Maneuver Brigades

OPFOR maneuver brigades have a separate organic engineer company. The brigade engineer company has the same structure as the engineer company assigned at the motorized or light division level.

Maneuver Battalions

The maneuver battalion has no organic engineers. However, as stated earlier, OPFOR maneuver units do have some engineer training and related equipment giving them a rudimentary autonomous capability to perform some engineering tasks. For instance, many tracked vehicles have an integral self-entrenching blade. Tanks, artillery, and other tracked vehicles so equipped can dig their own hasty fighting positions when going into the defense. Additionally, during river crossings, a large portion of the OPFOR mechanized fleet is amphibious, thereby allowing IFVs, air defense, artillery, and other vehicles to cross without extensive engineer preparation. In the area of mine warfare, every member of the OPFOR learns how to hand emplace landmines as a common task skill. Lastly, the bulk of the mechanical mineclearing assets belongs to the maneuver battalions, especially the mechanized and tank battalion. Each tank platoon, and some mechanized infantry platoons, have one vehicle with a track-width mine plow attached. That means that one in three tanks has a mine plow. The engineer platoon, organic to the tank battalion, and the tank crews normally attach the mine plows while in assembly areas prior to combat. Additionally, there is one mine-roller set assigned to each tank company. The mine roller set is attached to a tank only when required. Until then, the battalion's engineer platoon transports it and mounts it at a preplanned assembly area by using an engineer crane.

Allocation Procedures

If necessary, higher headquarters allocates additional engineer support to the maneuver battalion commander. This enables him to accomplish his mission and augment the battalion's limited autonomous capabilities. This enhances the battalion's ability to cross natural and manmade obstacles, and to improve or construct defensive positions and barriers. For instance, the lighter maneuver battalions or brigades do not have the extensive organic mechanized breaching equipment

that the heavier units do. Therefore, the OPFOR must rely more heavily upon reinforcing these battalions with armor or mechanized assets from higher, plus engineer construction support, to breach enemy defenses and barriers. Additionally, since only armored vehicles have self-entrenching capabilities, light forces need more engineering support to prepare vehicle positions and fortifications. Motorized and light battalions have no mine plows or breaching equipment to cross obstacles. They manually excavate survivability positions when transitioning to the defense.

ORGANIZATION FOR COMBAT

The tactical employment of engineers does not adhere to strict organizational lines or groupings. Instead, the COE task-organizes the engineers to perform multiple missions simultaneously. This results from the diversity in types and functions of equipment, and the unique mission or capabilities of the various engineer units (especially in the engineer battalion). These engineer assets frequently deploy throughout the battlefield and perform numerous distinct missions simultaneously during the course of the battle. In this way, route-clearing assets perform one function, while others perform demolitions, lay mines, construct obstacles, prepare defensive fighting positions, or set up water purification sites. Occasionally, the commander can also attach to these groupings additional non-engineer assets, such as chemical, tank, or motorized infantry troops, to these groupings also. The following is a list of typical task-oriented engineer groupings:

- Mobile obstacle detachment (MOD).
- Movement support detachment (MSD).
- Engineer reconnaissance patrol.
- Engineer observation post.
- Engineer photography post.
- Clearing group.

MISSIONS AND TASKS

The basic missions of OPFOR combat engineer support have both tactical and technical parameters. The nine **technical tasks** that engineer troops perform in support of combat are--

- Reconnaissance.
- Preparation of fortifications.
- Prepare and maintain march routes.
- Clear obstacles.
- Equip and maintain gap crossings.
- Establish obstacles.
- Carry out engineer camouflage measures.
- Extract and purify water and establish supply points.
- Carry out engineer measures to eliminate aftereffects of nuclear strikes.

The three tasks that are primarily combat engineer tasks are reconnaissance, obstacle clearing, and establishing obstacles. The remaining six are considered special-category engineer tasks. However, even though some may have a given specialty, all engineers continually train in all the engineer functions so that they can perform secondary or augmentation missions as necessary.

Figures 11-1, 11-3, and 11-6 reflect the missions and required technical subtasks engineer troops perform in support of each tactical operation. Engineer **support missions** and their related **technical tasks** vary according to the activity or tactical mission of the supported maneuver units, plus preparation for upcoming missions. The three major phases of tactical combat action are the **march**, the **offense**, and the **defense**. The maneuver commander specifies the tactical combat action(s), the start time and duration (level A and B), and the area these actions will take place. With this information, the COE determines the required engineer missions to support the plan and priori-

tizes engineer efforts to execute the technical tasks (level C) necessary to accomplish the mission. He can then determine the appropriate mix of troops, equipment, and materials necessary to perform the tasks under current conditions.

COMMAND AND CONTROL

Division and brigade commanders have a **COE** on the staff to provide advice, coordination, and supervision of organic and attached engineer assets. This staff officer is responsible for determining the best employment of engineer assets available to the command, to support the mission, intent, and objectives of the maneuver commander. He determines the priority of effort, organizes the necessary engineer support, tasks engineer unit commanders, and monitors the execution of the directed missions. The COE provides input to the commander's combat orders and battle plans, the reconnaissance plan, the obstacle plan, crossing of water obstacles and other barriers, the march route, and defensive plans. Engineer unit commanders are responsible for--

- Supervising the unit.
- Accomplishing assigned missions.
- Maintaining the equipment.
- Ensuring the welfare, training, and care of the personnel.

OPFOR doctrine reinforces success and concentrates massed resources to quickly and decisively influence the battle. The COE usually focuses engineer efforts in support of the main attack, or in a critical defensive sector. The main steps that the COE performs in support of combat actions are--

- Deciding appropriate organization of engineer support and reporting it to the maneuver commander.

- Participating in the reconnaissance conducted by the maneuver commander.
- Planning the execution of engineer support and tasking engineer units.
- Controlling and directing engineer groupings and monitoring the completion of tasks during the preparation for, and conduct of, combat.
- Organizing engineer construction support.
- Reporting the status of engineer support to the maneuver commander.

ENGINEER RECONNAISSANCE

Engineers conduct engineer reconnaissance independently, or combined with chemical and reconnaissance elements. If the COE needs unique specific engineer data for planning and preparation, he may use engineer assets to form engineer reconnaissance patrols and groups, observation posts, and photographic reconnaissance posts. Engineer reconnaissance elements usually gather the following information:

- Enemy engineer preparation of fighting positions.
- Location, type, and composition of enemy obstacles.
- Conditions of roads, bridges, river-crossing sites, and routes.
- Presence of local building materials and water supplies.
- Protective and camouflaging properties of the terrain.

The commander and his staff use this information to determine--

- Enemy courses of action and posture.
- The nature of the terrain.
- The necessary engineer effort required for the combat plan.

Assets

To provide engineer expertise, the OPFOR can attach engineer specialists to accompany a division or brigade tactical reconnaissance formation. The military district may also have an engineer reconnaissance platoon in the engineer battalion (company). This platoon has unique instruments and equipment to provide highly specialized data. Engineer divers, assigned to the reconnaissance diving platoon of the assault crossing company, also perform underwater reconnaissance. Additionally, reconnaissance elements of maneuver units can provide limited engineer-related information, although with less technical precision. However, under most conditions, the missions of all these reconnaissance elements preclude them from concentrating solely on engineer requirements. Therefore, the COE may form his own engineer reconnaissance elements to provide the specific data he needs for planning.

Patrols

Engineer reconnaissance patrols vary in strength from a squad to a platoon. They assess the routes chosen by the staff, checking the validity of plans made from the map. Engineer reconnaissance patrols report on--
- Obstacles, and the effort required to overcome them.
- Conditions of crossing sites on water obstacles.
- The general nature of the terrain.

Engineer advice is an important element in the selection of routes and crossing points. The engineer reconnaissance patrol can also include one or two chemical reconnaissance specialists.

Observation Posts

When enemy forces are within visible range, the OPFOR may simply establish engineer observation posts to watch critical sectors. The OPFOR supplements these with listening posts during restricted visibility. Two to three combat engineers, equipped with observation instruments, maps, and compasses,. normally man engineer observation posts. They position the observation post close to the forward edge of friendly troops in terrain that provides natural camouflage, protection, unobstructed viewing, and communications to the rear. With modern equipment an engineer observation post can view a sector 1 to 2 km along the front, and 5 to 6 km in depth.

MARCH

In support of the march, combat engineers are responsible for accomplishing tasks that permit the unimpeded movement of forces along the march route, plus activities at rest stops, assembly areas, and halts. See Figure 11-1. Some of these tasks include--
- Route clearing.
- Road and bridge repair.
- Camouflage measures.
- Water purification.
- Reconnaissance.
- Fortifications.

The time required to perform these tasks determines if they are in support of march preparation or in support of troop activity during the march (level A). On the march, there are two principal tactical missions (level B): engineer preparation in assembly, rest, and halt areas, and engineer support to troop movement. All seven technical tasks identified in Figure 11-1, level C, may be necessary to support the march.
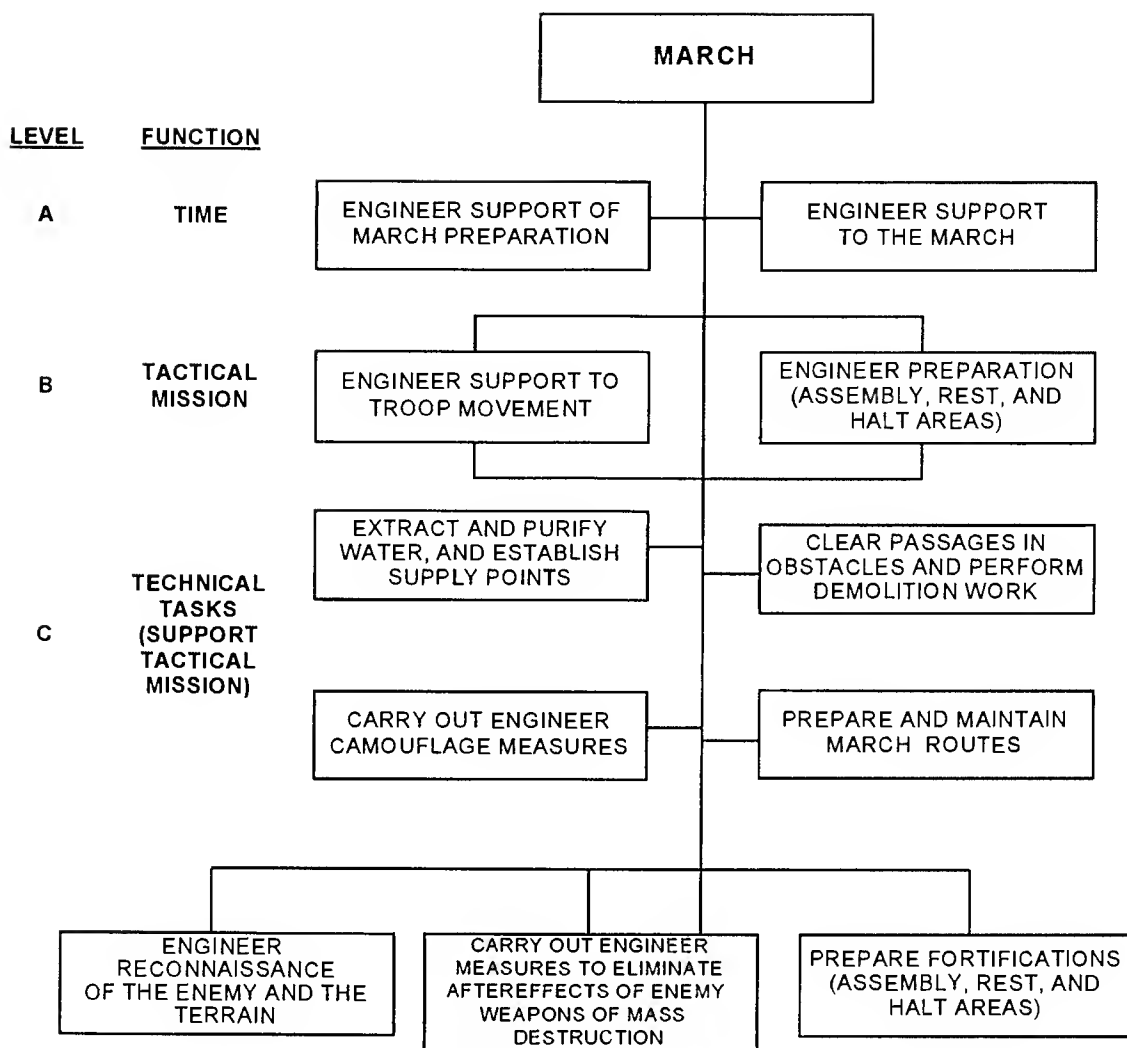
Figure 11-1. Combat engineer tactical missions and technical tasks on the march.

Reconnaissance Support

When OPFOR engineers reconnoiter routes, one of their goals is to identify anything that could impede mobility. Engineers report information on the condition of the roads, obstacles and bypasses, and bridge locations to the COEs and the commander of the engineer units. The commander can increase the size of his reconnaissance party and divide it into smaller teams in order to cover several points simultaneously. This allows him to access a large number of features in the shortest amount of time.

If the march takes place in the rear of friendly forces, the maneuver commander can send the engineer reconnaissance patrol in advance to obtain the required data. When conducting a march in anticipation of contact, engineer reconnaissance may be limited to reports from troop reconnaissance elements reporting on the engineer aspects observed along the route.

When reconnoitering routes, engineers attempt to--
- Verify the condition of the march route.
- Determine aspects of off-road terrain.

- Identify all obstacles and locate bypasses or recommended breach sites.
- Inspect bridges and hydrotechnical structures.
- Identify suitable rest and assembly areas.

When the OPFOR route of advance encompasses potential water obstacles, engineer reconnaissance patrols try to find spots to set up ferry and bridge crossings, plus assembly or preparation areas. If bridges exist, engineers gather information on the support structure, load capacity, necessary repairs, and the presence of mines and demolitions on the approaches and on the bridge itself. The reconnaissance of a water obstacle includes--
- Determining the depth, width, and current velocity.
- Slope of the banks.
- Soil condition on the bottom.
- Presence of underwater obstructions or mines.
- Camouflage potential of the area.

Depending on the mission, either an engineer reconnaissance patrol, or the reconnaissance element of an MSD can reconnoiter a water obstacle. The engineer battalion has qualified divers with scuba gear, plus specialized vehicles and equipment to analyze soil data, stream velocities, and depth, plus mine detection equipment. The engineers transmit this information to the COE for planning purposes. They mark recommended crossing sites, bypasses, routes, and critical areas for the follow-on engineer elements responsible for establishing the crossing.

March Routes

The OPFOR maneuver commander uses information gathered during engineer reconnaissance to select an appropriate march route. The march route selected should require the least amount of engineer preparation and route clearing.

The OPFOR defines a march route as any military road or cross-country road used for the movement of ground forces. A military road is an existing or newly built road equipped for the movement of fighting equipment and truck transportation. A cross-country road is a sector, selected and prepared or equipped for the one-time passage of military columns. The OPFOR categorizes a march route by direction (frontal and lateral), significance (primary and secondary), and vehicle type (tracked, wheeled, and mixed).

Military Road

A military road must be 3.0 to 3.5 meters wide for one-way motor vehicle traffic and 4.0 to 4.5 meters wide for tanks. For two-way traffic, the widths are 6 to 7 meters and 8 to 9 meters, respectively. The cross slope must not exceed 3 percent. The longitudinal slope cannot be more than 9 percent.

Column Tracks

The width of a one-way cross-country track in rugged terrain is 3.5 meters for wheeled traffic and 4.5 meters for tanks. The steepest cross and longitudinal slopes are 9 percent and 20 percent, respectively, and the minimum turning radius is 25 meters.

Route Preparation and Maintenance

After careful consideration of reconnaissance data, and consultation with the COE, the maneuver commander specifies the particular march routes his force will use. The COE is then responsible for planning and coordinating engineer support to prepare and maintain the specified march routes. He prepares the engineer support plan for the commander, then issues orders, missions, and requirements to the organic and attached engineer unit commander for execution. If non-engineer personnel are necessary to support the march route, the COE coordinates with the other appropriate staff element to attach the required support. This support may include tanks on which to mount mine roller/plow sets. It may also include receiving troops for manual labor, or chemical troops. Depending on the situation, he may concentrate work on one section of road, or divide the march route into critical sections, assigning an element to work on each.

The capability of engineer assets to prepare and maintain routes depends on the amount of work necessary. Optimally, a road construction company maintains up to 80 to 100 km of road per day in moderate terrain. These figures assume minimum earthmoving and obstacle-reduction requirements. If the roads are severely damaged, this capability drops to 20 to 40 km per day.

One road construction company can prepare up to 70 km of cross-country routes per day. The OPFOR reduces these planning figures by 25 percent to 30 percent at night, by 20 percent to 25 percent in the spring and autumn, and by 15 percent to 20 percent in winter. It increases the capabilities by a factor of 1.5 to 2.0 when preparing cross-country routes for tracked vehicles only.

Route Marking

The OPFOR uses standard fabricated signs to control traffic along a march route. The three basic types of signs it uses for march routes are route markers, warnings, and prohibitions. On cross-country routes, it places **route markers** on the right side on a march route, or in pairs along both sides of prepared routes, every 75 to 100 meters, enabling a driver to see two markers simultaneously. The OPFOR uses fewer markers on paved roads. Route markers indicate the direction of traffic and the intended user. **Warning signs** are also on the right side of the route, 50 to 70 meters from a hazard. Their goal is to get the driver's attention and call for a reduction in speed. **Prohibition signs** designate areas where traffic is forbidden.

Movement Support Detachment

To support the preparation of march routes, the COE creates an MSD before the march. Its mission includes--
- Route reconnaissance.
- Mineclearing and obstacle reduction along the march route.
- Reinforcement of bridges and minor repairs to roads.
- Creation of column tracks.
- Construction of bypasses.
- Construction of passages through debris and regions of destruction.
- Route marking.

The composition of an MSD is not fixed and varies depending upon the--
- Condition of the terrain.
- Character of enemy actions.
- Amount of work necessary.
- Assigned rate of movement for the columns.
- Availability of engineer troops and equipment.

The MSD is strictly a task-oriented, temporary grouping to support route clearance and movement of the force in preparation for, and during, the march. Once the tactical situation changes and the force transitions into the offense or defense, the commander dissolves the MSD, resubordinates the equipment, and assigns new taskings such as--

- Breaching or mineclearing assets may return to parent units or be attached to clearing groups (CGs).
- Route-clearing equipment returns to preparing lateral routes or assembly areas.
- Earthmoving equipment returns to constructing obstacles or fortifications.

When the force resumes the march again, the commander creates a new MSD, with much of the same equipment, to support the movement of the force along the route.

Reinforcements

The division COE augments or reinforces brigade engineer companies by sending additional engineer assets from district or division level to support creation of MSDs in lead brigades if necessary. The type and amount of labor required drives the numbers and type of engineer equipment reinforcing the brigade. Since brigade engineer companies have limited assets, the district may allocate its organic engineer battalion or company to the division to decisively shift, augment, or reinforce critical engineer effort as necessary. Additionally, engineers are responsible for capitalizing on the first-echelon brigades' engineer efforts and creating conditions favorable for committing a second-echelon brigade. Examples that could stress the capabilities of the brigade engineer assets and require augmentation are--

- A first-echelon brigade traveling on more than one march route.
- Routes requiring considerable clearing, repair, or maintenance that taxes or exceeds brigade engineer capabilities.

In cases such as these, MSDs in the lead brigades can be a combination of brigade, division, and district engineer equipment working together.

Second-echelon brigades, and those brigades not in the main attack may not receive additional reinforcement and may have to rely on their organic engineer company alone. If the brigade/division is in the military district's/army's first echelon and is participating in the main attack, the district, army, or region may reinforce the brigade/division with additional combat engineers.

The brigade usually assigns an engineer officer to act as the overall MSD commander. This officer oversees all the equipment and personnel assigned or attached to him for movement support. That includes brigade engineer assets, divisional engineer assets, or any combat troops attached to him (IFVs with plows and tanks with rollers or plows) during the MSD mission. He keeps the brigade COE advised of the route status and progress of work. Frequently, the MSD commander is the brigade's engineer company commander. If the brigade is on two march routes, there may be an MSD for each. In this case the brigade must receive reinforcement from an engineer battalion of a higher level of command. The brigade's overall MSD commander then has a subordinate leader in charge of an MSD for each route.

Work Groups

Several work groups, performing simultaneous functions along the brigade march routes comprise the MSD. Examples of simultaneous functions are--

- Fill craters.
- Remove rubble.
- Level a grade.
- Clear minefield residue.
- Mark route and detour locations.

Since different technical tasks and types of equipment are operating simultaneously, the MSD for each route frequently consists of several groups to allow simultaneous actions along the march route. Typical groups are a reconnaissance and clearing group, plus one or two road and bridge construction and repair groups. In addition, the OPFOR may attach a maneuver platoon to provide limited security, manual labor, or operate mine plows and rollers. It may also attach chemical scouts to monitor the chemical and radiological situation.

The MSD commander monitors and doublechecks the progress of each work group along the way and coordinates their labor from one site to the next. If necessary, he spends a lot of his time at critical locations making sure all goes well and providing immediate supervision. Normally, the MSD commander travels with the reconnaissance and clearing group, or the group completing the most complex tasks. Considering reports from the MSD commander on the ground, the brigade COE keeps the brigade commander informed. He also apprises the division/district of the work groups' status via the division COE. The division/district COE then informs his commander and advises of any problems or delays.

Reconnaissance and clearing group. Responsibilities of the reconnaissance and clearing group include--
- Marking the march route.
- Making immediate assessments of the terrain and obstacles.
- Identifying bypasses.
- Creating and marking passages through obstacles.
- Determining the character of destruction along the route.
- Locating building materials.

The reconnaissance and clearing group usually has--
- A combat engineer squad.
- Hand-held or vehicule mounted mine detection equipment.
- Explosives.
- Mineclearing vehicles such a tank with roller and plows.
- A route-clearing or obstacle-reduction vehicle.

To accomplish the MSD mission, the engineer battalion has specialized obstacle-clearing and route-clearing equipment complete with large, full-width articulated dozer blades and cranes or booms with grabbing arms. The engineer battalion can use explosive charges or mechanical equipment to overcome rock barriers and dragon's teeth (concrete pillars or iron posts). Combat engineers can breach wire obstacles after examining them for boobytraps and electrification. Tree barriers may require the use of bulldozer blades or explosives.

The MSD commander may break the reconnaissance and clearing group into a reconnaissance group and a clearing group. If he does this, the reconnaissance group is the lead MSD element and the CG follows the reconnaissance group.

Road and bridge construction and repair group. The road and bridge construction and repair group follows behind the reconnaissance and clearing group. The construction and repair group--
- Makes crossings through or over obstructions.
- Builds and reinforces bridges.
- Establishes fords and bypasses.
- Strengthens the route in swampy sections.
- Removes rubble.
- Repairs damage.

This group usually has tank- or truck-launched bridges, float bridges or ferries, route-clearing vehicles, one or more engineer squads, plus cranes and road graders. The equipment varies depending on what was passed down from higher levels of command. This group also completes the marking of the route begun by the reconnaissance and clearing group.

Position in March Column

During the march, the MSD travels in advance of the main body preparing the route so the main body can continue its advance unimpeded. Normally, the lead elements of the MSD appear in the vicinity of the advance guard to begin work in their assigned sectors. To insure the unimpeded movement of the main body, the MSD must complete all engineer preparation before the arrival of the main body. Once the MSD completes one section of work, it then proceeds to the next critical sector on the march route and begins again.

It is critical that the COE properly distribute or position engineer personnel and equipment not performing engineer specific functions throughout the column. The commander does not assign engineer personnel duties other than engineer functions. The COE deploys special engineers with recovery equipment forward and stations them at bridges, dams, and difficult sectors on the route.

Water Crossing

Crossing of water obstacles always requires some measure of engineer preparation, even if it is only limited to engineer reconnaissance at the crossing site. Whenever possible, the OPFOR attempts to cross water obstacles from the march, with minimum delay, and press the attack into the enemy's depth without first halting to consolidate on the far shore. If crossing from the march is not feasible, additional preparation and effort is required.

Categories

The width of the water obstacle affects the method of crossing, the type of crossing, the need for reinforcement, and the length of time to conduct the crossing. In terms of width, obstacle categories are narrow (less than 100 meters), medium (100 to 250 meters), wide (250 to 600 meters), and large (greater than 600 meters). In terms of depth, shallow water obstacles are up to 1.5 meters in depth, deep obstacles are 1.5 to 5 meters in depth, and very deep obstacles are over 5 meters deep.

Means

The OPFOR crosses narrow water obstacles by fording, on truck-mounted, and low-water bridges. Medium obstacles require amphibious assaults, plus ferry equipment and bridges. Wide and large water obstacles require amphibious assaults, ferry equipment, pontoon bridges, or float bridges with fixed approach spans. These assets are not organic to the brigade and must come from either the military district, mechanized infantry division, or higher. Although canals are narrow obstacles, engineers place them in a special category because their deep water and steep banks make it difficult to use assault crossings, ferries, and standard bridging equipment. It is often necessary to erect piers and special constructions to negotiate them.

Methods

The OPFOR expects the enemy to use rivers and other water obstacles for defensive purposes. It identifies two methods of overcoming water obstacles: **Opposed crossing** (when expecting enemy contact) and **unopposed crossing** (when not expecting enemy contact). Crossing is a generic term identifying the site of a river crossing or the act of crossing. Crossing involves using bridges, ferries, or amphibious combat equipment.

Opposed crossing is the the primary method of overcoming water obstacles. The OPFOR describes two types of opposed crossings: from the march and from positions in direct contact.

OPFOR planners consider crossing a water obstacle **from the march** to be the principal opposed crossing method against lightly defended water obstacles. It conducts an opposed crossing from the march with forces moving towards the river across a wide frontage, at top speed. Forward detachments or heliborne forces may seize favorable crossing sites in advance. The OPFOR executes the opposed crossing from the march in waves using engineer assault crossing equipment, if available, to carry non-amphibious combat material. This type of crossing requires secrecy, surprise, and high speed supported by obscuration and massive direct and indirect fire. To preserve the secrecy of the intended crossing and its location, the OPFOR generally uses minimal preparation or construction prior to its execution. It emphasizes conducting the crossing from the march as swiftly as possible and that the offense continues on the opposite shore. Other modes of crossing follow the initial crossing, depending on the capabilities of the enemy, the time available, and the characteristics of the river.

Conducting a water crossing **from positions in direct contact** is the least preferred method, used when a crossing from the march fails or is not possible. Such a crossing requires detailed planning and preparation, centralized control, and massive suppression of enemy fires. This method of opposed crossing requires intensive reconnaissance, most of which occurs under cover of darkness. During preparation, engineers prepare roads and cross-country routes to crossing sites, as well as assembly areas and artillery positions. They perform the majority of this work at night.

This method of opposed crossing takes place either at night or under a smoke screen. The dismounted infantry wade or swim across on a broad frontage supported by all available means of direct and indirect fires. After the infantry establishes a foothold, antitank guided missiles (ATGMs) and antitank (AT) assets follow. When they engage the enemy, the artillery starts crossing. The OPFOR emplaces bridging, if available, only when bridge sites are secure from enemy observation and direct fire.

Sites

The number of **crossing sites** depends on terrain, combat formation, and the tactical situation. As a rule, each first-echelon battalion requires two to three crossing points in a crossing sector, and two alternate sites. If the battalion crosses in one echelon, it requires three main and three alternate sites.

Mobile Obstacle Detachment

The MOD provides countermobility support. The minelaying section (squad) of the engineer mine warfare platoon usually serves as an MOD. The MOD is an engineer task-organized grouping. Its mission is to alter the battle by emplacing obstacles in response to enemy actions. The OPFOR commander's greatest concern is armor attacks and penetrations. Therefore, the MOD emplaces AT obstacles along possible armored routes. The commander creates the MOD to maximize mechanical minelaying and explosive obstacle support for maneuver forces during combat. Figure 11-2 shows the actions of an MOD in a meeting battle.
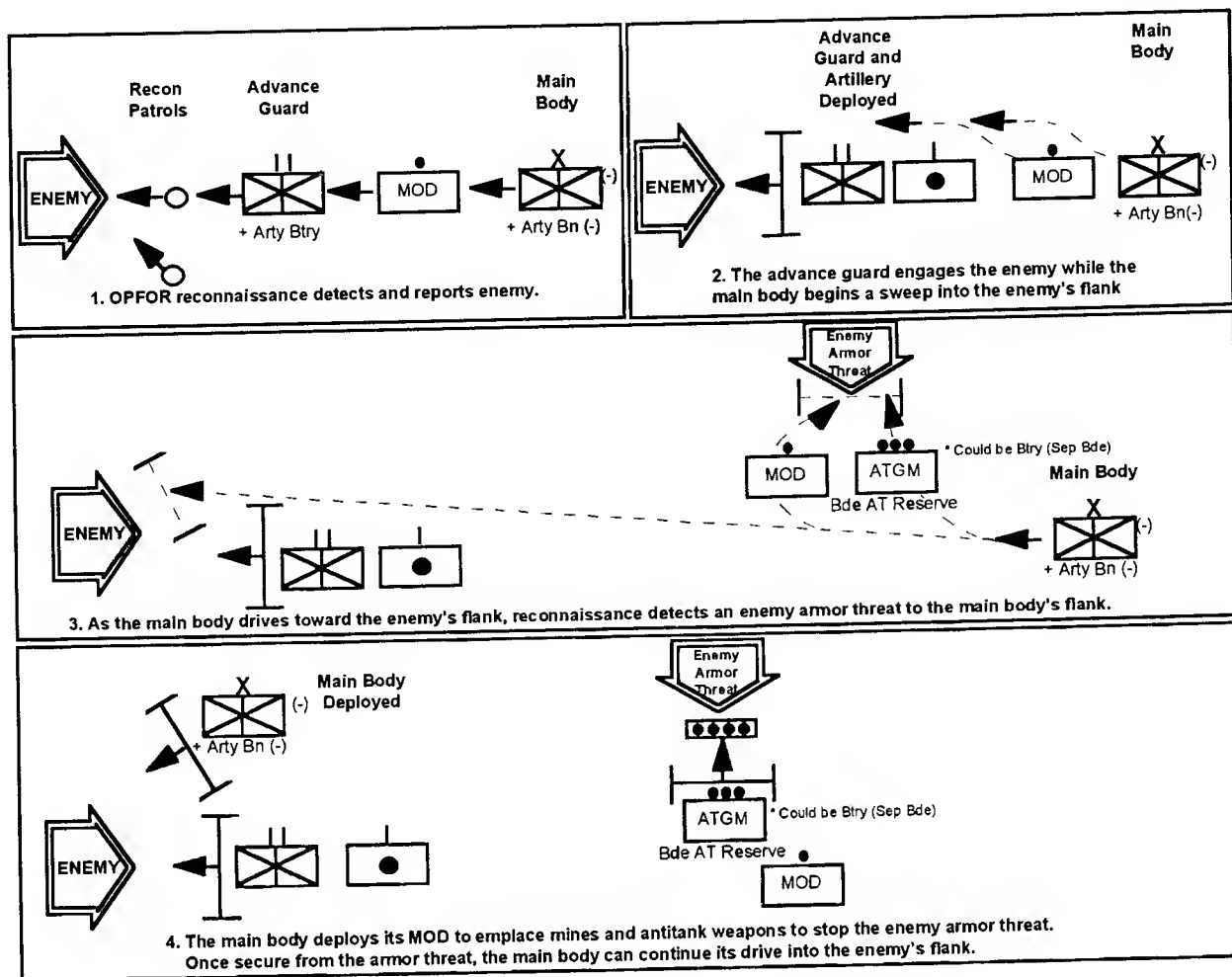
Figure 11-2. Mobile obstacle detachment in a meeting battle.

An MOD varies in size according to the tactical situation and the needs of the maneuver commander. The OPFOR employs MODs at the brigade level. The core of every MOD is the minelaying section (squad) of the mine warfare platoon from the brigade or division engineer company, or the minelaying platoon from the combat engineer company organic to a district/mechanized infantry divisional engineer battalion. (See the *Light OPFOR Organization Guide*.) These minelayers provide the commander rapid response, flexibility, and obstacle creation ability other systems or techniques cannot provide.

The MOD reports directly to the COE who assigns their priorities, areas of concern, and task organization. Although it can act independently, the MOD normally moves in close coordination with the AT reserve. This arrangement provides the commander with organizations capable of rapidly emplacing AT obstacles as well as overwatching AT fires.

Organization

The primary engineer system in the MOD is the mechanical minelayer. The district/division engineers have three minelayers, plus each maneuver brigade has three minelayers. The district/division can use its three minelayers to reinforce an existing MOD on a

critical brigade sector, or use to form an additional MOD. In addition to minelayers, MODs may add other engineer resources to support critical obstacle development. The district/division may supplement the MOD with combat engineers for demolitions work, ditchers to create AT ditches, plus other engineer systems. This reinforcement does not normally occur until the earthmoving equipment completes other tasks, such as preparing fortifications.

Employment

The commander positions the MOD so it can quickly deploy in response to enemy actions. This may be to seal a critical sector, or to provide time for the commander to shift his forces and fires if necessary. The maneuver commander, the COE, and other staff sections monitor the progress of the force and plan for possible enemy courses of action. They then identify battle positions and obstacle emplacement locations. If reconnaissance assets report enemy activity along a given sector that confirms a course of action, the commander dispatchs an MOD and an AT reserve to the appropriate battle position to conduct their missions.

During the march, the MOD normally travels behind the advance guard and in front of the main body. In a meeting battle, the MOD moves on the axis that supports the deployment of the main body for the attack. In the offense, the MOD usually moves forward with the AT reserve, either on an open flank or in a central position ready to deploy to a threatened direction. In the defense, the MOD lays minefields--

- To close gaps in the defense.
- Across the axis of an enemy armored advance.

- To block enemy breakthroughs or counterattacks.
- In front of an enemy air assault in the rear area.

Normally, the MOD locates in covered and concealed positions on a threatened axis or flank, or in a central position, often between the first and second echelons.

Survivability Support

During the march, the OPFOR establishes rest, halt, and assembly areas to protect the unit from attack. In doing so, engineers check the entire area for mines and prepare routes within the vicinity. They erect protective covers for personnel and material, and at a minimum, dig positions for air defense weapons. They erect security structures at control points, identify water sources, and employ camouflage measures.

Rest Areas

The OPFOR does not usually fortify rest areas, because they are temporary. Troops use organic camouflage nets to augment natural vegetation for concealment. The amount of engineer preparation at rest areas depends on the length of time a unit plans to remain at that location.

Halt Areas

When the unit is in a halt area for a day or more, it can spend 10 to 12 hours carrying out engineer tasks. These tasks include preparing covered slit trenches and partially dug shelters for all personnel. They also prepare hasty or prefabricated shelters for command posts and medical stations and covered revetments for supply stockpiles.

Water Supply

The OPFOR organizes water-supply points on the basis of data concerning the location and quality of ground and surface water. Water supply reconnaissance parties consist of engineer, chemical, and medical personnel.

Camouflage, Concealment, and Deception

The OPFOR carries out camouflage, concealment, and deception (CCD) in preparation for and during a march, to hamper or prevent the enemy from discovering the true deployment of units, their actions, and intentions. These measures include--
- Demonstration actions.
- Selection of terrain with natural screens.
- Selection of routes of march that minimize tracks and dust.
- Construction of artificial screens
- Movement at night or under other conditions of low visibility, including smoke screens created by use of obscurants.
- Convoy and light discipline.
- Concealed rest halts enhanced by individual vehicle screens.

To aid in river crossings, engineers can construct simulated crossing sites, before, or at the same time they are building actual ones. They try to draw the enemy's attention to simulated crossing sites while real ones remain carefully camouflaged. They give authenticity to simulated crossings by using corner reflectors, by deploying vehicles on roads and other approaches to them, by moving simulated vehicles across them, and by positioning construction and bridging equipment near simulated sites.

OFFENSE

In support of the offense, combat engineers are responsible for providing the troops, equipment, and materials required to satisfy the nine tactical missions, specified in level B, Figure 11-3. Level C of that figure identifies the nine technical tasks that the combat engineers must perform in support of the attack.

In the offense, the engineers' primary mission is to support the attack and assist in maintaining a high tempo of combat. During the preparation phase, the engineers focus on three major activities:
- Preparing routes for the advance and employment of combat forces.
- Establishing passages in obstacles and minefields.
- Equipping crossings over water barriers.

Occasionally, engineers create obstacles to protect flanks, disrupt counterattacks, and block reinforcements, while others provide force protection support to units in assembly areas. Ongoing engineer reconnaissance is performed independently or with other reconnaissance elements. It plays a critical role in achieving high rates of movement. Basic engineer tasks also include the support of logistics activities in the rear area.

OFFENSE

LEVEL | **FUNCTION**

A — TIME

ENGINEER SUPPORT OF ATTACK PREPARATION

ENGINEER SUPPORT DURING THE OFFENSIVE BATTLE

B — TACTICAL MISSION

ENGINEER SUPPORT TO REINFORCE CAPTURED POSITIONS

ENGINEER SUPPORT WHEN INTRODUCING THE SECOND ECHELON INTO BATTLE

ENGINEER SUPPORT IN REPELLING COUNTERATTACKS

ENGINEER SUPPORT IN FORCING WATER BARRIERS

ENGINEER SUPPORT TO THE PENETRATION

ENGINEER SUPPORT TO OVERCOMING THE ENEMY COVERING FORCE

ENGINEER SUPPORT IN A MEETING BATTLE

ENGINEER SUPPORT TO THE ADVANCE, DEPLOYMENT AND TRANSITION TO THE OFFENSE

ENGINEER SUPPORT TO ASSEMBLY AREAS

C — TECHNICAL TASKS (SUPPORT TACTICAL MISSIONS)

EXTRACT AND PURIFY WATER, AND ESTABLISH SUPPLY POINTS

CARRY OUT ENGINEER CAMOUFLAGE MEASURES

ESTABLISH OBSTACLES

EQUIP AND MAINTAIN GAP CROSSING

CLEAR PASSAGES IN OBSTACLES AND CLEAR MINEFIELDS

PREPARE AND MAINTAIN MARCH ROUTES

PREPARE FORTIFICATIONS (ASSEMBLY AREAS)

CARRY OUT ENGINEER MEASURES TO ELIMINATE AFTEREFFECTS OF WEAPONS OF MASS DESTRUCTION

ENGINEER RECONNAISSANCE OF THE ENEMY AND THE TERRAIN

Figure 11-3. Combat engineer tactical missions and technical tasks in the offense.

Engineer troops continue to perform tasks contributing to a high-speed advance once the attack has started. The OPFOR views commitment of a second echelon as one of the most critical and vulnerable periods of combat. Engineer troops play a vital part in ensuring its success. They ensure timely arrival on the line of commitment, and provide support for OPFOR deployment and protection against flank attacks.

Reconnaissance Support

Engineer reconnaissance during preparation for offensive battle tries to obtain information on the nature of enemy fortifications and defensive positions, and the composition and types of enemy equipment and obstacles. The basic methods for obtaining this information are raids, observation and aerial or ground photography.

Direct observation is useful to gain knowledge of terrain or to assess enemy equipment and fortifications. Ground photography provides information on the enemy defensive posture and engineer preparations within range and direct line of sight. Aerial photography provides information deep within the battle area. Engineer observation posts with maneuver battalions and companies in direct contact with the enemy and with troops going into an attack from the march carry out reconnaissance by observation. Engineer photographic reconnaissance posts photograph enemy defenses from the ground. Aerial photography is requested through channels.

During the offense, the primary engineer reconnaissance mission is to obtain precise information on--
- Enemy obstacles and destruction created both during attack preparation and during the attack.
- Troop movement routes and trafficability of off-road terrain for attacking combat units.
- Locations where the enemy established obstacles during his withdrawal.
- Water obstacles on the main axis of advance.

Engineers reconnoiter the area of the advance and the sector of commitment. This is usually a map reconnaissance backed up by a ground or aerial survey of the routes. Once the attack has started, aerial reconnaissance and assets of higher-level commanders continue to reconnoiter obstacles deep in the enemy's defensive area. Engineer and maneuver troops confirm this information through the course of battle.

Route Preparation

The methods and means of preparing and maintaining routes when on the march generally apply to the offense. In preparation for an attack from the march, the road net includes frontal and lateral routes in the assembly area and in the zone of advance to the forward edge.

The OPFOR applies the following norms to **tactical** march routes:
- A division receives a zone of advance, normally with two to four march routes.
- A brigade normally receives one or two march routes.
- A battalion receives one march route.

For further information on march routes, see Chapter 3, March.

Attack from the March

In an attack from the march, each battalion should have one frontal route and one lateral route. The battalion also has cross-country routes to advance from its assembly area to the frontal route.

A battalion usually moves from its assembly area on one frontal route until it reaches the line for deployment into company columns (battalion prebattle). Using one route per company, it moves from that line to the dismount area where the company deploys into platoon columns (company prebattle). The companies remain in prebattle formation until they arrive at their assault positions where the platoons deploy laterally into battle formation Engineers mark directions from the assault positions to lanes through obstacles in front of the forward edge. There can be lateral routes at the lines for deployment into company and platoon columns. With favorable conditions and enough existing roads, a battalion may have a secondary frontal route. Route preparation and marking begins immediately after battalions and companies occupy their assembly areas and ends 2 to 3 hours before movement begins.
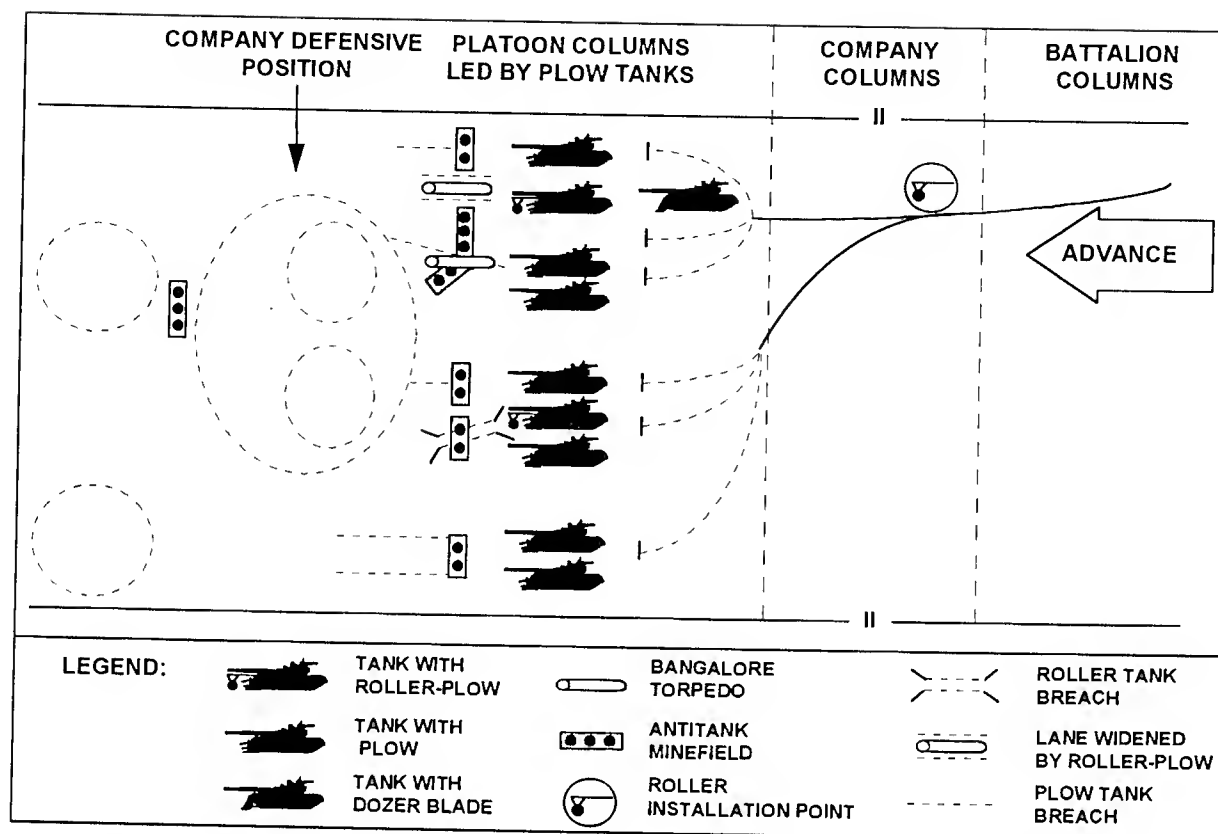
Figure 11-4. First echelon of tank battalion attacking through minefield (example).

Attack Against Defending Enemy

For an attack against a defending enemy, infantry and tank battalions and companies prepare routes with designated lanes across natural and manmade obstacles. (See Figure 11-4 for an example of this for a tank battalion.) During the attack, each first-echelon battalion needs a prepared battalion column route. Forces of the senior commander prepare frontal routes for movement of second-echelon battalions, reserves, and artillery. The COE tasks some of the same engineer route-clearing equipment with supporting the transition to the offense and the commitment of the second echelon. For more information on the attack, see Chapter 5, Offense.

Engineers focus support of second-echelon movement on preparing routes and breaching obstacles for the advance and deployment of the combat formation. During its advance, the first echelon may also use these roads. In its move to its line of deployment, a division requires two to four routes. Normally, the engineers also create one to two reserve routes. Ideally, the first-echelon engineer resources complete the engineer work for the commitment of second-echelon forces. This allows the second-echelon's organic engineers to remain fresh, properly deployed, and unburdened for upcoming combat action. When the second-echelon forces reach their line of commitment, they need more routes to deploy for battle: at least two for each first echelon brigade. The preparation of these, together with associated minefield breaching and gap crossing, is the responsibility of the unit being committed to battle.

11-18

Breaching Obstacles

The OPFOR is prepared to overcome obstacles during all phases of combat to include the march, the offense, and the defense. In the offense, troops expect to cross obstacles in assembly areas, on movement routes, and in front of and in the depths of the enemy defense. Creating passages for the advance of the force is an engineer task. However, tank and infantry battalions also have equipment and trained personnel to conduct limited independent countermine functions. The methods for creating breaches and passages depend on the situation and on the type of barriers the enemy uses.

Explosive Obstacles

Of the obstacles the OPFOR expects to encounter, mines are the most significant. The development of remotely-delivered, scatterable mines increases the threat to the rear area. It has made clearing explosive obstacles a primary task for the MSD. The OPFOR has three basic means of breaching a minefield. The primary means are explosive and mechanical. The least preferred is by hand. Explosive line charges, and mechanical mine-clearing plows or plow and roller combinations mounted on combat vehicles, provide the main countermine capability.

Scatterable minefields. A maneuver company may find itself "straddled" by a **scatterable minefield** during movement in columns. When this happens, it stops, reports its location, and initiates a self-extraction. It accomplishes self-extraction by--

- Having elements near the edges self-extract to the perimeter.
- Having interior elements gravitate to a central extraction lane.

Some tank- and IFV-equipped units may have one mounted mine plow per platoon. If the straddled unit does not have plows, or if the mines have full-width-attack fuzes that negate the effectiveness of the track-width plows, the crew dismounts and clears passage lanes by hand. Platoons or companies, not on the central lane, use their own forces to create passages to it. Dismounted infantry crosses minefields by following in the tracks of tanks, or APCs, or along cleared passages. Follow-on elements attempt to bypass known scatterable minefields or use the established, marked lanes created by first-echelon battalions and companies. When available, engineers clear scatterable minefields by hand, using explosive line charges or obstacle- and route-clearing vehicles with full-width blades.

Passages in OPFOR minefields. Before launching an attack from positions in direct contact, the OPFOR must clear lanes in its own minefields. This usually occurs 1 or 2 hours before the attack, preferably at night. As a rule, the engineer battalions or companies clear the obstacles that they established. The COE assigns the engineer battalion or company commander the mission to clear minefields in a specific area. The company commander then organizes teams to manually clear breach lanes using probes, hand held mine detectors, and shovels. In one night, a combat engineer squad usually clears one lane, a platoon clears three, and a combat engineer company clears up to nine.

Breaching enemy minefields. Breaching enemy minefields is a combined effort involving all troops and a combination of mechanical and explosive means. This is especially true when breaching minefields in front of the forward edge of the enemy defenses and within the enemy's defensive area. Normally, the maneuver brigade commander creates CGs composed of tanks and mechanized or motorized infantry elements from the lead battalions, reinforced with engineer support.

Normally, engineers reconnoiter the minefield, determine its characteristics, attempt to locate a bypass, and mark the best breach locations if a bypass is unavailable. Combat engineers attempt to infiltrate the minefields and manually prepare a breach lane. When possible, they accomplish the breaching or marking at night or under cover of smoke and artillery fire.

One tank in each tank platoon can have an attached mine plow, if available, in anticipation of encountering a minefield. (See Figure 11-5.) Each tank company can also have a mine roller set, which is mounted using engineer cranes. Some OPFOR IFVs may have mine plows. Engineers prepare breach lanes using bangalore torpedoes and rocket-propelled line charges, or assemble explosive line charges for towing behind the breaching tanks. The commander plans a minimum of six to eight lanes for each of the first-echelon battalions. Engineers then expand successful breach lanes to facilitate the passage of the force with the goal of making gaps a minimum of 6 to 8 meters wide.

Traffic Control

Once the engineers clear and mark the lanes with flags or lighted markers, the remainder of battalions and companies begin crossing. Combat engineers provide traffic control through the cleared lanes. They man traffic control points at the entrance of each lane and, if necessary, at the exit point. They widen, mark, maintain, guard, and re-clear the breach, as required. The maneuver commander designates a crossing commander from the combat engineer company to supervise the crossing of the maneuver elements.
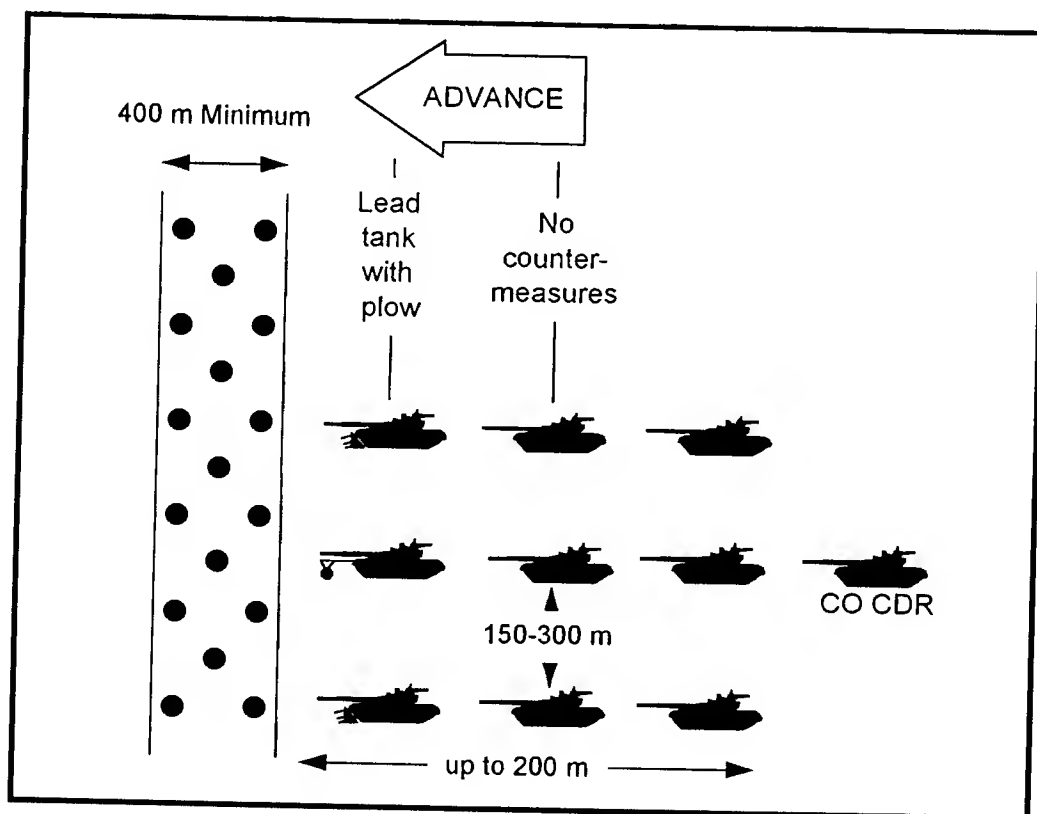
Figure 11-5. Ten tank company in platoon columns breaching a minefield (example).

Nonexplosive Obstacles

During the attack, the CG also creates gaps in both nonexplosive obstacles. In this case, the group requires additional engineer reinforcement beyond just countermine equipment. The CG may employ obstacle-clearing vehicles to knock down berms. It may also use truck-launched bridges to cross AT ditches.

Water Crossings

When approaching a water obstacle, the OPFOR selects a march formation based on the mission, enemy, and terrain. It deploys the engineer assets well forward when approaching a water obstacle. Motorized infantry units lead, while fire support elements deploy forward to overcome expected enemy resistance on the line of the obstacle. As in an ordinary attack, this involves the deployment from march configuration to battle formation as late as possible and immediately before assault on the water obstacle.

Unopposed Crossing

The district, division, or brigade commander may send out a forward detachment (FD) ahead of the advance guard and first-echelon brigades when there is an opportunity to seize a bridgehead over an undefended or poorly defended water obstacle or bridge. The FD attempts to bypass enemy resistance forward of the water obstacle and infiltrates to the far side of the water obstacle to estasblish a bridgehead.

The OPFOR may use a tactical airborne landing in cooperation with an FD to--
- Seize the crossing site or an existing bridge.
- Seize key ground dominating the crossing site.

- Block the approach of enemy reserves.

First-echelon brigades can have a reinforced company serving as an FD and a reinforced battalion as an advance guard. The advance guard eliminates enemy resistance on the near side of the water obstacle to facilitate the main body's advance. The advance guard usually performs a hasty crossing in two echelons, sending two motorized infantry or mechanized infantry companies in the first echelon, and one company in the second echelon. Whenever possible, a reinforced battalion should cross in no less than three waves.

Opposed Crossing

The OPFOR usually employs an opposed crossing against a large, well-defended water obstacle. It may become necessary if a crossing from the march fails. In either of these situations, the advance guard clears the near bank and holds it. Combat reconnaissance patrols and engineer reconnaissance elements endeavor to identify enemy obstacle efforts, locate enemy positions and determine the character of the enemy defenses.

First-echelon brigades. The main body moves into brigade assembly areas approximately 15 to 20 km back from the water obstacle, out of artillery range. Mechanized or motorized infantry battalions lead the assault, crossing in battalion waves on a brigade frontage of about 5 km. IFVs and APCs enter the water at H-hour, and on reaching the far bank the infantry dismounts. A motorized infantry battalion crosses either in prebattle or battle formation, depending on the width and entry and exit slopes of the crossing sites and on the strength of the enemy. Attached engineers then begin clearing obstacles from the far bank, if required. Direct fire from tanks, if available, and artillery can support the engineers from the near bank.

Bridges. Construction of bridges starts when the enemy is denied the ability to subject the crossing to direct or observed fire. If the air situation is unfavorable, the OPFOR may only use bridges during periods of limited visibility and tuck the bridges into the bank and camouflage them at other times.

Artillery. Brigade artillery groups position within 3 km of the river, with division artillery groups or military district artillery groups another 3 to 5 km back. The OPFOR may use its howitzers in the direct fire role to support the crossing. Artillery crosses the obstacles by batteries. One crosses while two remain deployed.

The preparatory fire for a well-defined water obstacle is similar to that for an attack from positions in direct contact. Intensive air attacks occur shortly before the assault. If visibility is good, the OPFOR uses smoke.

Follow-on forces. The second echelon or reserve may temporarily move to a concealed location if the advance is delayed by a water obstacle. Engineer construction of a division or district bridge[1], on which these troops can cross, is unlikely to begin before H+30 minutes. The engineers may complete it 30 to 60 minutes later. After it crosses, the second echelon continues the advance. It usually does not consolidate or expand the brigade/division's bridgehead.

Survivability Support

The OPFOR approaches field fortification in a manner that allows a smooth and protected advance towards the enemy. The OPFOR locates assembly areas far enough behind the friendly lines to deny the enemy ground observation, reconnaissance, and target acquisition, and to minimize effects from indirect fires. The OPFOR tries to prepare a separate assembly area for each bttalion-sized unit, using engineer equipment to construct positions for vehicles shortly after they arrive at their assigned location. Within 1 to 2 hours, engineers dig fighting positions for all personnel. They prepare prefabricated structures for battalion command observation posts and carefully camouflage all structures.

During the offense, the goals of CCD are essentially the same as on the march. Offensive measures include--
- Selection of terrain for its screening effect.
- Use of obscurants (smoke screens).
- Use of artificial and natural camouflage screens.
- Simulation of characteristic defensive measures--to "mine" the terrain in view of the enemy with decoy minefields or to give the appearance of reinforced defensive positions.
- Use of concealed routes for movement of supplies and reserves.

DEFENSE

Engineer support for the defense focuses on reconnaissance, fortifying friendly troop positions, carrying out engineer camouflage measures, and adapting the terrain for defense. This last item includes--
- Preparing lateral routes.
- Decontaminating terrain.
- Clearing minefields.
- Emplacing minefields and obstacles.
- Locating, extracting, and purifying water.

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[1] The constuction of such a bridge requires allocation from a higher level of command.

Defensive planning measures ensure extensive use of obstacles, integrated with preplanned direct and indirect fires to affect the enemy's advance and facilitate his destruction. Figure 11-6, level B, identifies five spe cific tactical missions supported by combat engineer efforts. The performance of nine technical tasks specified in Figure 11-6, level C, satisfies the requirements of engineer troops in the tactical mission.

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                              ┌─────────────────┐
                              │     DEFENSE     │
                              └─────────────────┘

LEVEL    FUNCTION

                    ┌──────────────────────┐    ┌──────────────────────┐
  A      TIME       │ ENGINEER SUPPORT OF  │    │ ENGINEER SUPPORT TO  │
                    │ DEFENSIVE PREPARATION│    │ DURING THE DEFENSIVE │
                    └──────────────────────┘    │       BATTLE         │
                                                └──────────────────────┘

                    ┌──────────────────────┐    ┌──────────────────────┐
  B      TACTICAL   │ ENGINEER SUPPORT TO  │    │ ENGINEER SUPPORT TO  │
         MISSION    │ REINFORCE LINES TAKEN│    │ THE SECOND-ECHELON   │
                    │ IN A COUNTERATTACK   │    │   COUNTERATTACK      │
                    └──────────────────────┘    └──────────────────────┘

                    ┌──────────────────────┐    ┌──────────────────────┐
                    │ ENGINEER SUPPORT IN  │    │ ENGINEER SUPPORT TO  │
                    │ REPELLING ENEMY      │    │  DEFENSIVE AREAS     │
                    │ ATTACKS IN FRONT OF  │    └──────────────────────┘
                    │ FORWARD EDGE         │
                    └──────────────────────┘    ┌──────────────────────┐
                                                │ ENGINEER SUPPORT IN  │
                                                │ THE BATTLE TO RETAIN │
                                                │     POSITIONS        │
                                                └──────────────────────┘

     TECHNICAL TASKS
  C  (SUPPORT TACTICAL
       MISSIONS)
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Figure 11-6. Combat engineer tactical missions and technical tasks in the defense.

The COE determines the extent of engineer preparation necessary after considering the conditions that caused the OPFOR to assume the defense. If it is during the course of the offensive, support begins with the MODs and AT reserves protecting threatened axes and the improving of the route(s) needed for regrouping. If it is a defense out of contact with the enemy, support begins with the creation of defense works and the improvement of routes for the formation to deploy. In both cases, the goals and missions of engineers are to support development of the defensive area by--

- Protecting personnel and equipment from the effects of conventional fire and weapons of mass destruction.
- Enhancing the effectiveness of weapons.
- Creating or improving obstacles.
- Extracting and purifying water.
- Supporting battle and transitioning to the offense.
- Providing reconnaissance of enemy and terrain.
- Assisting in repelling enemy attacks in front of forward edge.
- Assisting in repelling counterattacks or penetrations into defensive sector.
- Supporting retention of positions.
- Supporting second-echelon counterattack.
- Reinforcing lines taken in counterattack.

Reconnaissance Support

During defensive combat, engineer observation posts monitor enemy engineer activity, evaluate zones of destruction, and report areas where the enemy is breaching defensive obstacles. At least one of the posts provides detailed photography of the battle area. The posts forward all information to the maneuver commander and the COE. In the defense, engineer reconnaissance elements reconnoiter terrain and the enemy situation to determine routes best suited for a return to offensive action.

Route Preparation

In the defense, the OPFOR prepares and maintains march routes as it does in the offense. Damage from enemy attacks, however, may require continual repair work. Defensive route preparation is peculiar in that it is necessary to prepare both frontal and lateral routes on the sole basis of usage time, regardless of who uses them.

In the defense, the OPFOR prepares one frontal route for each battalion from the closest lateral route. The OPFOR prepares cross-country tracks from the battalion rear area to company strongpoints. It also prepares routes of advance to the counterattack deployment line for second-echelon battalions and companies. It also prepares routes to firing lines for tanks on the basis of one or two per battalion.

At brigade level, organic assets prepare all routes. Engineers prepare routes for the rapid and concealed deployment of counterattack or blocking forces. They clear, improve, and mark existing roads. Engineers also prepare maneuver routes to the front and flanks and supply evacuation routes.

Countermobility Support

OPFOR engineer obstacles include any actions taken to inflict losses and to delay and impede enemy movement. The creation of engineer obstacles and execution of demolition activities are critical engineer functions in all phases of the battle. In the defense, engineer obstacles--

- Protect flanks.
- Disrupt attacks.
- Block enemy reinforcements, second echelon, or reserves.
- Strengthen the defense.
- Disrupt enemy activities.
- Canalize the enemy into kill zones.
- Cover gaps between defenders.

The OPFOR divides engineer obstacles into three categories:

- Explosive obstacles—minefields, groups of mines, and objects prepared for demolition.
- Nonexplosive obstacles—AT ditches, escarpments, abatis, wire barriers, and water obstacles.
- Combination obstacles—a combination of explosive and nonexplosive obstacles.

Of the three categories, **explosive obstacles** are the most common. Engineers and others can emplace minefields more easily and quickly when compared to the construction effort for nonexplosive obstacles. Additionally, the OPFOR plans for the self-destruct or self-neutralization capabilities frequently found on scatterable mines. It can also lay mines with remote-control devices to activate or deactivate the minefield at will. This minimizes the adverse effect of friendly minefields on future actions and reduces the need for the OPFOR to breach its own obstacles.

This is not the case with **nonexplosive obstacles**, however, which are time- and resource-intensive to install and eliminate. For these reasons, the OPFOR usually emplaces mines and explosive obstacles first, and eventually supplements them by constructing nonexplosive obstacles.

When this occurs, they create **combination obstacles** that represent the next most common type of obstacle. It is extremely rare for the OPFOR to use a nonexplosive obstacle in isolation without any mines, explosives, or booby traps.

Minefields

The OPFOR frequently uses minefields during all phases of combat. There are five basic types of OPFOR minefields:

- Antitank.
- Antipersonnel.
- Mixed.
- Decoy.
- Antilanding.

The OPFOR stresses the importance of covering minefields with both direct and indirect fires, particularly with long-range AT weapons. Minefields inflict damage on attacking enemy forces and slow and canalize enemy forces into kill zones covered by massed fires. Whenever possible, the OPFOR contains enemy forces in a window of vulnerability for the longest length of time possible. This facilitates the destruction of the enemy.

Conventional OPFOR minefields generally conform to doctrinal standards. This standardization ensures that engineers and combat personnel follow consistent uniform practices. Scatterable minefields, however, are much less predictable in pattern. Maneuver battalion and company commanders use combat soldiers to emplace protective minefields around fighting positions, while engineers shape the battlefield for the maneuver commander. Commanders of battalion and company units emplacing mines prepare minefield records in three copies: one for the unit, one to the brigade, and one to the district/division. The COE at district/division and brigade level then uses the records to prepare combined obstacle overlays for the maneuver commander. Minefields are a fundamental part of the total obstacle plan that incorporates barriers and terrain features.

Antitank. AT minefields are the primary type of OPFOR engineer obstacle. The OPFOR emplaces AT minefields on likely avenues of approach for enemy tanks or other armored vehicles. The OPFOR usually emplaces AT minefields on a frontage of 200 to 300 meters or more to a depth of 60 to 120 meters. The mines are laid in three or four rows with approximately 20 to 40 meters separating each row. The normal spacing between AT mines in the rows is 4 to 5.5 meters for pressure activated mines, and 9 to 12 meters for full-width-attack mines. The normal mine outlay for 1 km of frontage in AT minefields is usually 300 to 400 full-width-attack mines, or 550 to 750 pressure-activated mines. This mine outlay can reach 1,000 or more AT mines per km of frontage on major avenues of approach. The OPFOR refers to this density of mines as a "minefield of increased effectiveness." In urban environments, the OPFOR may place groups of AT mines on narrow streets and alleys. It calculates emplacement of AT mines at the rate of one mine per 100 meters of street. Figure 11-7 illustrates the general emplacement of an AT minefield.
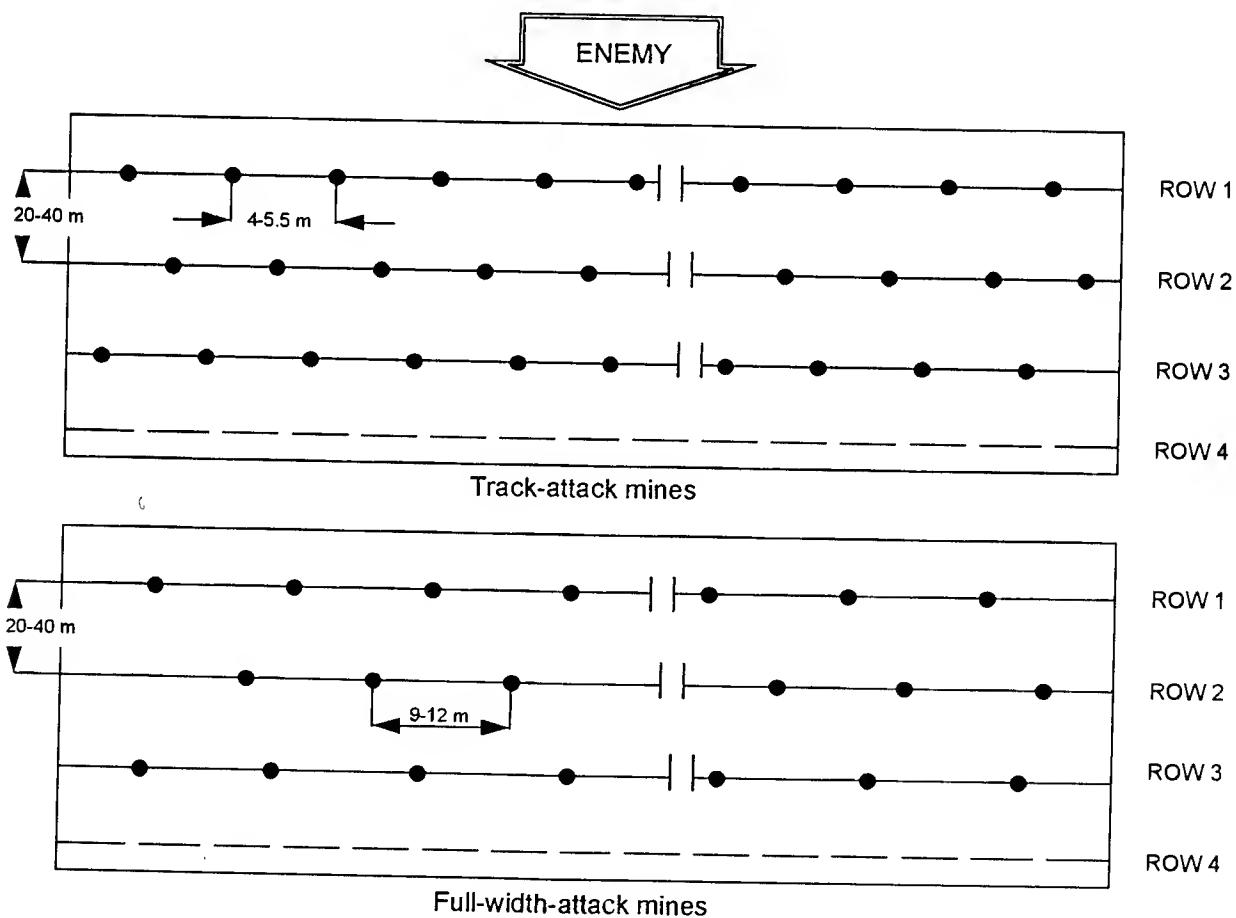
Figure 11-7. OPFOR antitank minefield configuration.

Antipersonnel. The OPFOR can set up conventional antipersonnel (AP) minefields on the forward edge of friendly defensive positions, in front of AT minefields, or along dismounted avenues of approach. These minefields can consist of blast mines, fragmentation mines, or a mixture of the two. The OPFOR emplaces AP minefields on a frontage of 30 to 300 meters or more with a depth of 10 to 50 meters or more. It usually lays AP mines in two to four rows with a distance of 5 meters or more between rows. The OPFOR may emplace 2,000 to 3,000 blast and 100 to 300 fragmentation mines per kilometer of front. An AP minefield of increased effectiveness may have as much as three times the normal outlay of AP mines. Intervals between mines in a row are at least one meter for blast mines and up to twice their destructive radius for fragmentation mines. Figure 11-8 shows variations of the employment of AP minefields.

Emplacement of minefields with increased effectiveness is more likely on dismounted avenues of approach. In urban environments, the OPFOR can emplace 2 to 3 fragmentation mines for every 50 to 100 meters of street. It prefers to use blast mines and fragmentation mines within buildings.
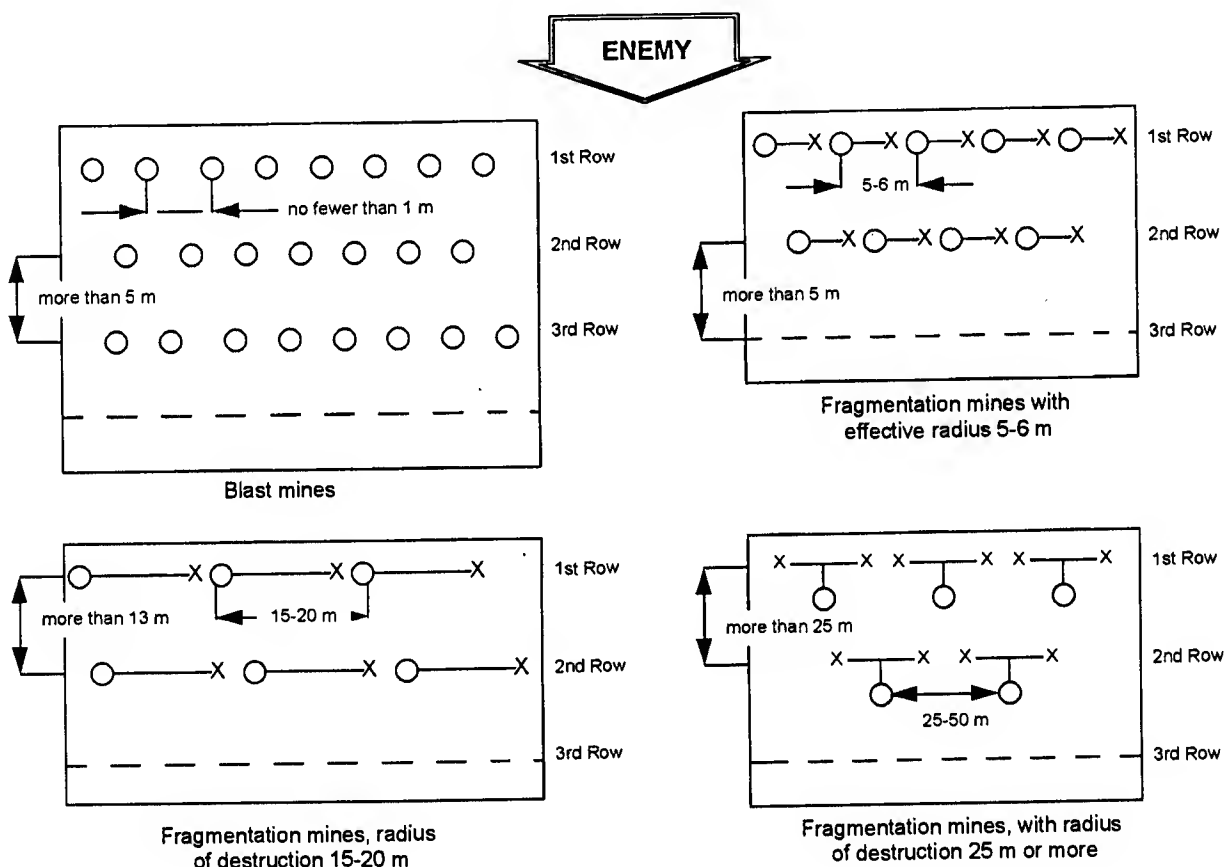
Figure 11-8. Example antipersonnel minefield configuration.

Mixed. Mixed minefields contain both AT and AP mines. However, the OPFOR does not mix AT and AP mines within a mine row. A mixed minefield is a minefield with pure homogenous rows of either AP or AT mines. The AT mine requirements govern the mixed minefield's parameters, outlay, and density. In areas that are not suitable for armored vehicles, AP mines constitute the majority of mixed mine obstacles.

Decoy. The OPFOR uses decoy, or false minefields to mislead the enemy as to the locations of actual minefields. Decoy minefields are part of OPFOR tactical deception. Decoy minefields typically give the impression of mining activity, usually scarification of the soil, mine laying debris, minefield fences and markers.

Antilanding. The OPFOR uses anti-landing mines when conducting combat along the seacoast or inland water features or at possible landing or drop zones. It employs explosive, nonexplosive, and combination obstacles. Minefields established in the water consist of bottom and anchored mines and, at shallower depths, waterproof mines. The OPFOR uses all types of mines above the shoreline, emplacing them following normal minefield doctrine. At landing and drop zones it uses fragmentation and directional AP mines.

Minelaying

The method and extent of laying the minefields depends on--
- The tactical situation.
- Terrain characteristics.
- The type of mine.
- The time available.
- The engineer support available.

Taking these factors into account, the means of emplacing minefields can be manual, mechanical, or remote. Since minelaying is a common-task skill, all OPFOR soldiers perform manual emplacement. This is the preferred method of maneuver units. However, manual minelaying is time-consuming and is not possible during high-speed maneuver operations. Mechanical minelayers belong to engineer units and can quickly emplace either buried or surface minefields. Missiles, artillery, aircraft, and engineer ground scattering dispensers, if available, may lay remote minefields.

With the high tempo of the modern mobile battlefield, the use of remotely-delivered mines is increasing. In volume, however, they do not exceed the use of conventional landmines. Uses of scatterable mines are to--
- Isolate enemy forces enabling the OPFOR to maintain superior force ratios.
- Disrupt the attacking forces, causing them to deploy early and expend mine-clearing assets.
- Disrupt and delay enemy second echelons, reserves, or counterattack forces.
- Paralyze enemy artillery during counterbattery fire.
- Interdict lines of communication.
- Prevent the use of a logistics site.
- Protect flanks.
- Seal breaches or gaps in friendly obstacles.

Conventional minefields are better suited to protecting defensive positions that the OPFOR intends to maintain for some time. In this case, it takes greater time to bury and camouflage the mines, and integrate the minefields into the total defensive scheme. Mine density in these types of fields is also greater.

These minefields are more likely to have a mix of AT and AP mines. In setting up a fully-prepared defense, troops of all units take part in preparing obstacles and laying mines.

Manual. The OPFOR manually emplaces minefields when--
- There is no contact with the enemy.
- Mechanical minelayers are unavailable.
- It is inadvisable to use mechanical minelayer because of terrain restrictions.

A mine warfare platoon can manually lay 200 to 300 AT mines in one to two hours. It can recover about 200 AT mines an hour, if the mines are not equipped with self-destruct or antihandling devices.

Mechanical. OPFOR engineers rely extensively on mechanized minelayers. These can bury or surface-lay AT mines. The layout of mechanically emplaced minefields is the same as those emplaced by hand.

The normal sequence for mechanically laying mines is to emplace the most forward minefield first and to work progressively back to friendly defensive positions. The engineers align the mechanical minelayers parallel to the forward edge. The minelayers start at separate intervals. This causes a 30- to 45-degree echelon formation. This staggers the minelayers as they travel along the forward edge. This method ensures the mines will not be directly behind another when approached by the enemy. (See Figure 11-9.) This increases the probability for a mine encounter by ensuring that if an attacker misses the first mine, he should still encounter one in subsequent rows.

Aerial. Both AT and AP minefields can be laid using aerial mine laying systems. Some light and medium transport helicopters have the capability to perform minelaying missions. The light transport helicopter does not carry armament when accomplishing these missions. A flight of one light transport helicopter delivers 60 to 80 AT mines or 100 or 120 AP mines. To lay a minefield, 15 by 30 meters, takes approximately six flights of a single light transport helicopter with AT mines.
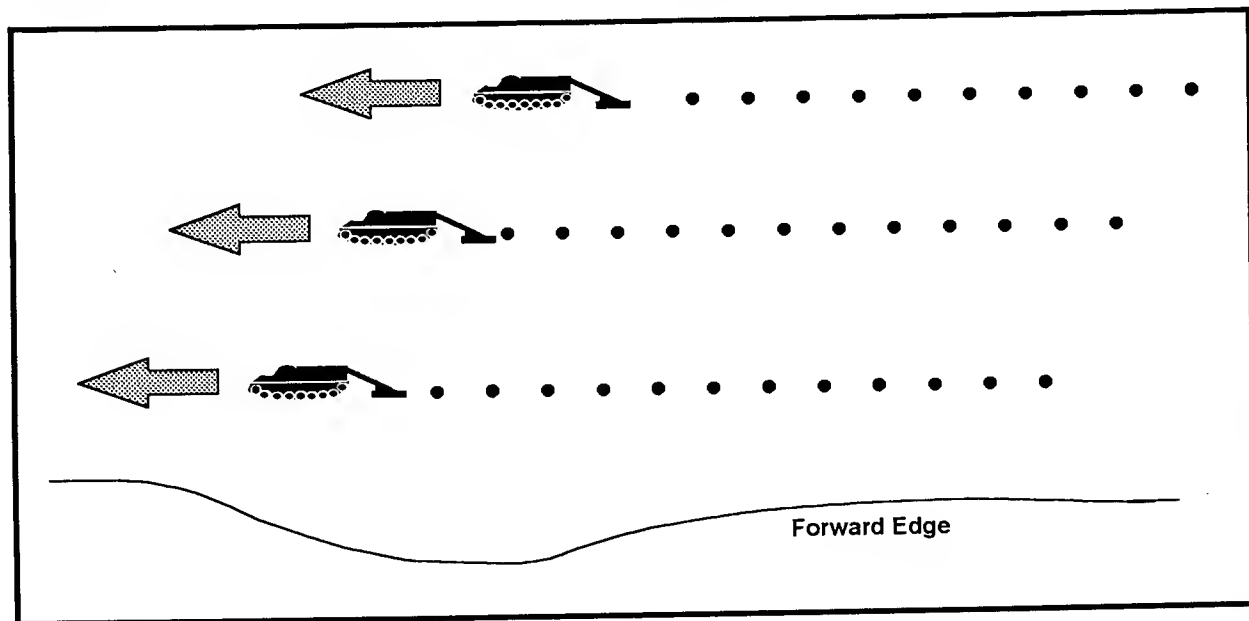
Figure 11-9. Mechanical minelaying sequence.

The medium transport helicopter equipped with a minelaying system delivers 100 to 140 AT mines or 200 to 220 AP mines with approximately four flights of a single medium transport helicopter.

Remote. The OPFOR continues to develop methods of remote minelaying, including delivery by minelaying helicopters, fixed-wing aircraft, multiple rocket launchers, or surface-to-surface missiles. Remote mining provides the OPFOR with the capability to strike targets and project mines into enemy territory. Remote minelaying is useful against columns and areas of enemy concentrations, command posts, firing positions, and other objectives.

Multiple rocket launchers (MRL) are the primary means of remote minelaying. Although aircraft provide another method of delivering ordnance, the OPFOR usually limits their use along the flanks. The principal advantage of MRL mine delivery is its ability to quickly emplace large minefields in a single volley, while minimizing exposure to enemy targeting and weapon systems. This provides the OPFOR commander with the responsiveness and tactical flexibility he desires. For example, a single volley from a 220-mm MRL battery can emplace over 2,300 AT mines in a minefield approximately 3 km wide.

Demolitions

The OPFOR emphasizes the importance of roads as high-speed avenues of attack for both friendly and enemy forces. It views the use of demolitions on roads as a significant way to disrupt enemy movement. Approaches to water obstacles, overpasses and bridges, ravines, intersections, bypasses, and roadways through urban or rough terrain are critical points at which the OPFOR uses demolitions.

Nonexplosive Obstacles

Nonexplosive obstacles fall into three categories: AT, AP, and antilanding. Nonexplosive AT obstacles include ditches, dragon's teeth, and various other manmade and natural barriers. Antipersonnel obstacles include concertina and barbed wire. Antilanding obstacles include dragon's teeth, AT ditches, and wire obstacles. The OPFOR uses these obstacles at potential drop or landing zones for amphibious, airborne, or heliborne assaults.

Survivability Support

In the defense, preparing fortified positions, to include command posts, is a task for engineers. Fortified positions increase OPFOR weapons effectiveness. They also protect personnel, weapons, and material from enemy targeting and reconnaissance assets, and from the effects of enemy attack. Although engineers have the bulk of specialized equipment for constructing sophisticated survivability positions, developing and improving these positions is a force responsibility. Battalions and below exert maximum effort to prepare positions. When building the positions, they must take advantage of the protective and camouflaging properties of the terrain, local building materials, engineer construction quipment, explosives, and prefabricated installations.

Levels of Fortification Protection

The fortification of defensive positions involves--
- Individual and crew-served fighting positions.
- Entrenchments.
- Communication trenches.
- Firing positions for tanks, IFVs, air defense, and other weapon systems.
- Protection for logistics or C^2 centers.

Maneuver forces, with infantry using shovels and armored vehicles using integral self-entrenching blades, start this process. Meanwhile, engineers using specialized equipment dig positions for critical sites such as medical facilities and C^2 centers. As engineer equipment becomes available, it supports maneuver units by augmenting and improving on the work they have already begun. Considering the projected time of stay, the conditions of the terrain, and the upcoming combat tasks, the maneuver commander determines the amount, sequence, and time for the fortification of an area.

The OPFOR categorizes field fortifications according to purpose. It divides them into structures for --
- Firing and observation.
- Protection for personnel, equipment, and material.

The OPFOR also classifies fortified structures according to the level of protection provided against direct and indirect fire, as indicated below.

Open. These structures include emplacements for motorized infantry squads and fighting equipment, fighting trenches, communication trenches, slit trenches, and the simplest installations for observation and vehicle pits. These positions protect personnel and equipment from direct fire. They also reduce the effects of conventional and nuclear munitions blasts by a factor of 1.5 to 2 times over unprotected positions.

Semi-closed. Semi-closed structures are partially-covered sections of fighting trenches and communication trenches. They have light overhead trench covers with a layer of dirt, or partially covered pits for the fighting and transportation equipment.

Closed. Closed structures include trenches, dugouts, shelters, and permanent weapon emplacements. These provide protection for the personnel from all types of enemy fire and from all destructive factors of nuclear weapons or incendiaries.

Fortification Priorities

Commanders assign fortification priorities to tasks that provide the best level of protection at all times against a possible enemy attack. The normal priority is from front-to-rear, beginning with the primary fighting positions, then the temporary positions, alternate positions, and if possible dummy positions.

One of the greatest factors influencing the level and sequence of fortification preparation is whether the transition to the defense will be in contact, or out of contact with the enemy. If first-echelon maneuver units are in direct contact with the enemy, they prepare their own hasty positions as best as possible. Meanwhile, the maneuver commander uses his limited engineer equipment to--
- Strengthen the depth of his defense.
- Maximize the effectiveness of his weapons.
- Prepare alternate positions for frontline troops.

Preferably, engineer preparations occur at night or under other conditions of reduced visibility.

The OPFOR develops fortifications in the defensive area in a sequence that guarantees the constant combat readiness of the personnel while simultaneously providing an increase in protection from enemy weapons. During this process, the OPFOR makes extensive use of camouflage to hide its activities from ground and air observation. Under optimum conditions, the development of defensive fortifications for a motorized infantry battalion is as follows:

First. Personnel clear sectors of observation and fire and quickly prepare individual emplacements for personnel, tanks, AT, air defense, and other weapons. Personnel use open slit trenches. Using covered slit trenches, engineers construct dugouts made for COPs and medical points. Camouflage measures are also performed.

Second. Engineers construct covered slit trenches and dugouts for the personnel. They then connect individual emplacements into squad trenches, and prepare emplacements for alternate fighting positions.

Third. Over time, the OPFOR connects squad trenches into continuous trenches across the entire platoon, company, and battalion frontage. It also builds shelters (one per motorized infantry company), prepares niches for ammunition in trenches, improves overhead protection, and opens communication trenches to the rear.

Camouflage, Concealment, and Deception

The OPFOR uses various CCD measures to mislead the enemy about size and location of forces and weapon systems and about the nature of defensive engineer preparations. Defensive measures include the use of--

- Use of screening properties of terrain, darkness, and other conditions of limited visibility during engineer preparation of defensive positions and positioning of forces.
- Camouflage painting of material.
- Use of local materials and standard issue camouflage screens.
- Strict camouflage discipline.
- Construction of false strongpoints, decoy positions, and equipment.

- False actions to draw attention.
- Assimilation of minefields and obstacles to the terrain.

Artificial camouflage. The OPFOR employs artificial camouflage as a supplement when natural screens cannot guarantee the concealment of forces and combat material. It includes both natural and manufactured camouflage. The OPFOR uses camouflage nets and screens extensively. It improves multispectral screening by using camouflage nets, covers, and individual camouflage equipment.

Decoys. The OPFOR uses deception activities and equipment to counter enemy reconnaissance. All OPFOR engineer units receive special training in constructing decoys from locally available materials. They may use obsolete equipment for deceptive purposes. The emphasis is on tactical systems.

The OPFOR plans to employ mock-ups and decoys as an integral part of future battles. Simulations can obscure OPFOR intentions and cause the enemy to waste effort destroying decoys. The engineers bear a major responsibility for constructing simulations. The OPFOR places emphasis on those engineer camouflage measures that it can transport easily and construct rapidly.

The OPFOR feels the following conditions must exist in order for decoy equipment to be successful:

- Placement must be in areas where the enemy would reasonably expect to find that type of actual equipment in use.
- Dimensions of simulated equipment must approximate that of actual equipment.

Decoy equipment may be "animated," giving the impression it is mobile. The animation or movement of simulated equipment should suggest movement patterns characteristic of real equipment. Engineers can supply simulation teams to accomplish this.

The simulations that engineers construct can represent any type equipment in the OPFOR inventory. Actual equipment that is not functional due to combat damage or mechanical malfunction can be made to appear operational by repainting it to conceal damage or by constructing components to simulate destroyed parts. Engineers may also construct large area simulations such as dummy/decoy airfields or logistics facilities in rear areas. Extensive animation activities, such as the movement of vehicles within these false installations, can add credibility to the simulation.

Engineers can create false excavations to simulate revetments, hull-defilade vehicle trenches, or individual fighting positions. These false excavations may be only half the depth of actual excavations although the engineers may create the appearance of greater depth by adding dark materials such as branches, grass, or soil to the bottoms. Troops can temporarily occupy these simulated positions and fire from them to aid deception.

WATER SUPPLY

Water supply is an engineer function. The maneuver units' organic engineer battalions or companies locate and extract water and assist in water purification. The chief medical officer monitors water sources. Using units must protect and maintain their water distribution points and equipment.

Water Use Norms

The OPFOR dictates precise water use norms. The water use norm for combat personnel is 10 liters per day, in high temperatures 15 liters, and 8 liters in the winter. A division, for example, can be up to 150,000 liters of drinking water daily. Under adverse conditions, especially in contaminated or arid areas, the minimum rate of water issue is--

- 2.5 liters per person for no more than 5 days in moderate conditions
- 4 liters for no more than 3 days in hot weather.

Non-potable water is useful for decontamination and disinfection of weapons, equipment, and supplies. The OPFOR has water norms for these tasks, ranging from half a liter for cleaning an assault rifle with damp cloths to 600 to 1,000 liters to decontaminate a vehicle with a water jet.

Water Supply and Distribution Points

Engineers can set up water supply points at water sources in unit areas. In the defense, it is expeditious to create supply points in the various company or battery areas, inside or near the defensive perimeter. When arid conditions, scarcity, or contamination make it impossible for units to have individual water supply points, troops receive water from centralized water distribution points.

Criteria for selecting a water supply point include not only the quantity and quality of the water, but also the availability of suitable roads and terrain. Although subsurface sources are preferable, surface sources (lakes, streams) are most common. Soldiers set up a sanitized protective zone with a radius of 50 to 100 meters around each point. Markers and/or signs indicate the points, distribution locations, and access routes. There are control posts on the approaches.

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The OPFOR concept of the "rear area" visualizes war stretching from the forward edge back to the capital. There are two aspects in the logistics support concept: national and operational-tactical. The **national** aspect includes the entire country, its population, economy, government, and political structure. It is the production base for necessary war materiel, the mobilization base for personnel replacements, and the control center for the complete war effort. The **operational-tactical** aspect includes the activities of all military units that provide maintenance, materiel, and medical support to combat forces.

This chapter deals only with the operational-tactical aspect of OPFOR logistics. For information on OPFOR logistics structures, organizations, and doctrine at echelons above division and during peacetime see *Light OPFOR Operational Art Handbook*, Chapter 9, Logistics and Rear Area Security.

The OPFOR has the capability to structure logistics for two distinctly different types of logistics systems. One system supports an **expeditionary army**. The other system supports **military districts**. There are significant differences in structure and missions of the two logistics systems. These two systems are on different ends of the logistics capabilities spectrum, one supporting the mechanized army (and its divisions) far outside of the state, the other supporting separate brigades within the country. This chapter addresses both of these systems. At times, the reader may have difficulty determining exactly which system is being discussed. One should be familiar with the *Light OPFOR Operational Art Handbook*, Chapters 2 and 4, before using

this chapter. The following paragraphs explain the major differences between the two systems.

The expeditionary army operates **outside** of the boundaries of the State and may be over 300 km from the military region providing its logistics support. The expeditionary army usually is mechanized due to its role as a mobile offensive force. (See *Light OPFOR Organization Guide.*)

Military districts are **inside** the State. Its role is primarily the defense of the State. Units subordinate to the military district cross international boundaries only in support of the expeditionary army cross-border attack. Therefore its logistics do not have the long-distance requirements of the army. Districts also receive local support and rely more heavily on logistics bases, supply depots, and caches.

The OPFOR divides logistics support into three principal functions. These functions are discussed later in this chapter.
- Materiel support.
- Maintenance.
- Medical support.

MATERIEL SUPPORT

Materiel support includes the storage, transportation, and supply of ammunition, petroleum, oils, and lubricants (POL), spare parts, food, clothing, water, and other consumable items. Basically, this category covers all materiel required to fight the immediate battle.

Materiel Support Principles

Forward Distribution

The OPFOR operates under the forward distribution principle, in which higher headquarters directly supply the next-lower echelon. (See Figure 12-1.) Organic transportation assets of the higher headquarters deliver supplies directly to subordinate units. Thus, a military region transports materiel to military districts using the transportation assets of the military region. The military region controls all the depots throughout its subordinate military districts.

The "Tactical Support" portion of this chapter addresses forward distribution in the offense. In the defense, the military region routinely distributes directly to separate brigades in the military districts. In this manner, the tactical materiel support system (division and below) links with the operational system. The burden of supplying and maintaining engaged brigades falls upon higher headquarters. Therefore OPFOR planners have put the bulk of their logistics resources at the operational level (military region). The advantages of the system are obvious--the separate brigades remain mobile. They remain free to move and fight unencumbered by slow-moving supply shuttles of organic vehicles, while the military region maintains the logistics backup. This system also allows the focusing of scarce resources to support priority requirements.
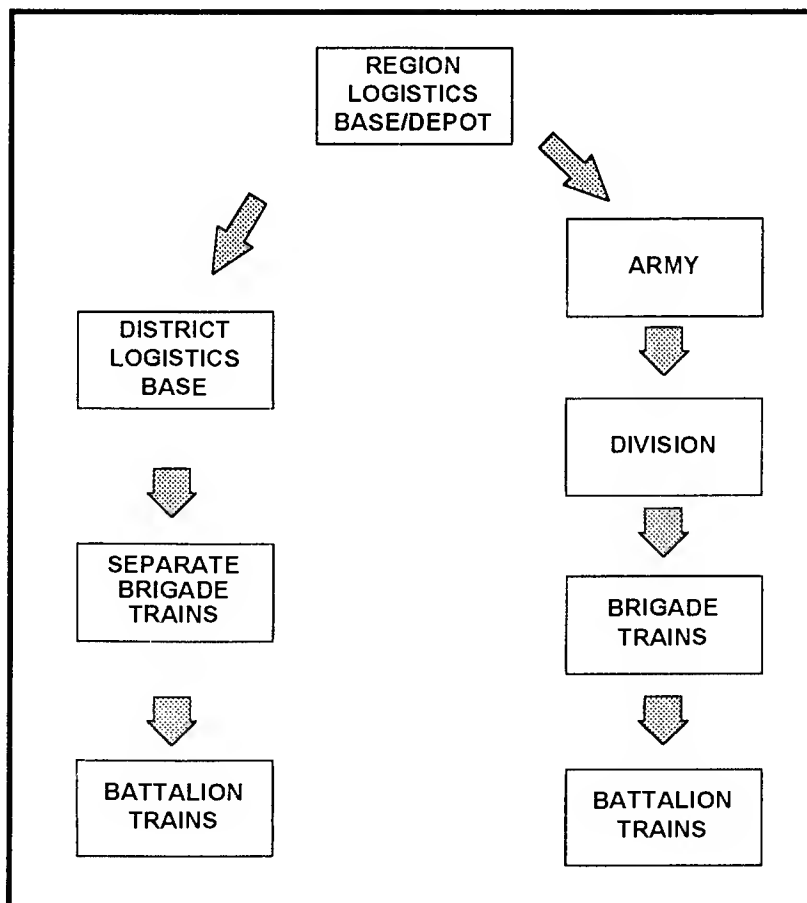
Figure 12-1. Forward distribution.

During emergencies, it is possible to bypass one level of supply. For example, a brigade may deliver directly to subordinate company. This concept does not prevent a subordinate unit from using its assets to obtain supplies from its higher headquarters, especially in critical situations.

Tailoring of Logistics to Combat Conditions

Despite a high degree of centralization of logistics support, commanders have flexibility to adjust the amount and type of logistics support combat conditions demand. Higher headquarters can tailor logistics by structuring support units.

Prioritization

In the **offense**, supply priority generally goes to units conducting the main attack. Moreover, the relative priorities for ammunition, POL, repair parts, and other items fluctuate with the combat situation. For example, a unit advancing rapidly with no opposition has a greater need for POL than for ammunition. In the **defense**, supply priority generally goes to units defending on the major enemy avenue of approach.

Use of All Possible Resources

The local populace supports the OPFOR in the defense. In the offense, the OPFOR forages for food and uses captured stocks of POL, engineer materials, and ammunition (if compatible). The OPFOR establishes extensive supply points and caches. For information on stockpiles and caches, see the logistics stockpile portion of Chapter 9, *Light OPFOR Operational Art Handbook.*

Use of Trailers

A strength of the OPFOR logistics system is the large number and extensive use of trailers. Materiel support units move loaded trailers forward to fighting units and exchange them for empty trailers. The empty trailers return to rear logistics bases for reloading. Thus, fighting units maintain maximum quantities of critical supplies such as ammunition and fuel without incurring a large cost of manpower at the fighting level.

Logistics Bases

During wartime the **military district logistics base** supports separate infantry brigades in the defense of the region. The district commander determines the final structure of the district logistics base. (See Figure 12-2.) The army supports divisions and the divisions support their brigades.

The district base receives supplies from the region base, augmented from stocks in the district arsenals and depots. In emergencies, adjacent districts may provide additional materiel. The district base usually is in a district capital and performs most intermediate-level maintenance. It is also the lowest level of command able to provide complete medical care often operating from fixed medical facilities.

Fuel and ammunition convoys from district deliver to the brigades. If road conditions do not allow delivery by commercial type trucks, supplies shift to tactical transport. The materiel support battalion controls all non-engineer local labor assets.

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                    | DISTRICT  |
                    | LOGISTICS |
                    |   BASE    |
                    +-----------+
                          |
    +----------+----------+----------+----------+
    |          |          |          |          |
+--------+ +--------+ +--------+ +--------+ +--------+
|MATERIEL| |        | |        | |HOSPITAL| |        |
|SUPPORT | |MAINTEN-| |ENGINEER| |MEDICAL | |* REGION|
|BATTALION| |ANCE    | |CO/BN   | |BATTALION| |DEPOT  |
+--------+ |CO/BN   | +--------+ +--------+ +--------+
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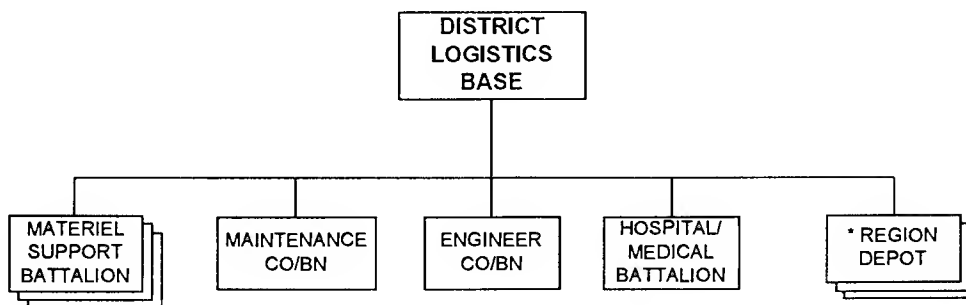
* A military district can contain one or more region depots. However, these depots are not subordinate to the military districts.

Figure 12-2. District logistics base.

Tactical Support

The division materiel support battalion carries division supplies. This system ensures that lower-level maneuver units do not have to carry ammunition, POL, and rations to sustain themselves for a lengthy period. Each higher level of command is responsible for providing timely and complete logistic support to its subordinates. Accordingly, logistics organizations and resources occur at each echelon.

However, combat units still must have the capability to carry **mobile stocks**. (See Figure 12-3.) Each level of command maintains these supplies, from basic loads on com-bat vehicles to trains at battalion, brigade, and division. The supply system moves commodities forward and delivers them daily. The supply interval during intense combat may be a half day for a lead battalion and possibly several days for a division. This means it is necessary to resupply some battalions at least two times a day, and divisions at least every two days. Companies may need resupply more often, depending on the tempo of the battle. Delivery of certain supplies (ammunition, POL, and medical) occurs daily whenever possible to maintain the offensive momentum. Upon commitment to combat, a division needs to have all classes of supplies as far forward as possible.

Unit	Organic Combat Sustainability	Location
Company & Battalion	.5 to 1 Day	On-board
Brigade	1 to 2 Days	Materiel Support Company
Division	1 to 2 Days	Materiel Support Battalion
Total	2.5 to 5 Days	

Figure 12-3. Combat sustainability.

Ammunition

The army materiel support brigade delivers ammunition to the division trains. The division trains maintains a portion on cargo vehicles for delivery to subordinate brigades. These ammunition stocks last the division from 2.5 to 5 days. In preparation for offensive operations, the army materiel support brigade stockpiles additional ammunition for immediate access and use by each level from company/battery up through army. The basic loads for crew-served weapons are dispersed throughout the crew and possibly the platoon.

A **basic load** of ammunition is that ammunition that remains with, or directly accompanies, the weapon system. Weapons systems such as, tanks, APCs, IFVs, self-propelled artillery, and antiaircraft guns have the capability to carry ammunition on-board. Other systems, such as towed artillery must have ammunition directly accompanying them in trucks or other types of transport. A specified amount of ammunition remains at each higher echelon from battalion through the military region supporting the expeditionary army. This is in addition to the ammunition in a combat unit (battery/company) designated for each organic weapon. The OPFOR uses the basic load for planning. The basic load for each weapon or weapon system is a fixed number of rounds. The OPFOR uses the basic load for planning. The mission, the enemy, and availability of ammunition determine multiples of the basic load used. Some example basic loads are in Figure 12-4.

POL

Fuels and lubricants are second only to ammunition to resupply tactical units. Refills are the basis for computing fuel requirements. A unit's refill is the total requirement for all vehicles in that unit. For tracked vehicles, one refill is that amount carried aboard in integral fuel tanks. For wheeled vehicles, one refill is equivalent to that required for a 500-km range.

A minimum of 2.5 to 5 days of mobile fuel stocks remain at division level. The divisional materiel support battalion moves POL to brigades. Vehicles at brigade and below have POL delivered directly to them. Units on the move refuel their vehicles during rest halts from tanker trucks and trailers. Vehicles may refuel from cans carried on board. In emergencies, brigade and battalion trucks haul fuel and ammunition.

Weapons System	Basic Load
Medium Tanks	
T-55 (100-mm)	43
T-62 (115-mm)	40
T-64 (125-mm) *(missile)*	40 *(36rd/6missile)*
T-72 (125-mm)	40
T-80 (125-mm) *(missile)*	40 *(36rd/6missile)*
Assault Guns & Light Tanks	
ASU-85 (85-mm)	40
PT-76 (76-mm)	40
Artillery	
SP Howitzer 2S9 (120-mm)	60
SP Howitzer 2S1 (122-mm)	40
SP Howitzer 2S3 (152-mm)	46
SP Gun 2S5 (152-mm)	25

Figure 12-4. Example weapons systems basic loads.

Rations

Basic ration norms determine the amount of food products issued to feed one man for a 24-hour period. Meals per man per day determine the amount of rations issued. The expenditure of energy caloric requirements of military personnel serves as the baseline for norms. Supplemental norms determine the amount of products issued in excess of the basic ration norms based on conditions under which the men serve. Troops receive dry rations on the basis of 1 kilogram per man per day. Two kilograms per man per day is the basis for fresh rations. Foraging or assistance from local sympathizers augments the daily rations. Divisions carry a 5 day food supply. The troops receive one hot meal a day whenever possible.

Organizational Materiel Support Capabilities

Supply points and logistics bases back up the military districts. Materiel support units are responsible for the transport, storage, and distribution of supplies. Maintenance units handle equipment maintenance, but the materiel support units receive all repair parts. Logistics bases contain a wide range of specialized company-size depots and units. Depots are responsible for branch-specific supply storage and issue as well as the maintenance of branch specific-equipment.

The tactical logistics structure consists of materiel support battalions, maintenance battalions, and medical battalions at the military district and division level. See Figure 12-5 for the structure of a materiel support battalion. Brigades have materiel support companies and medical platoons. See Figure 12-6 for the structure of a materiel support company.
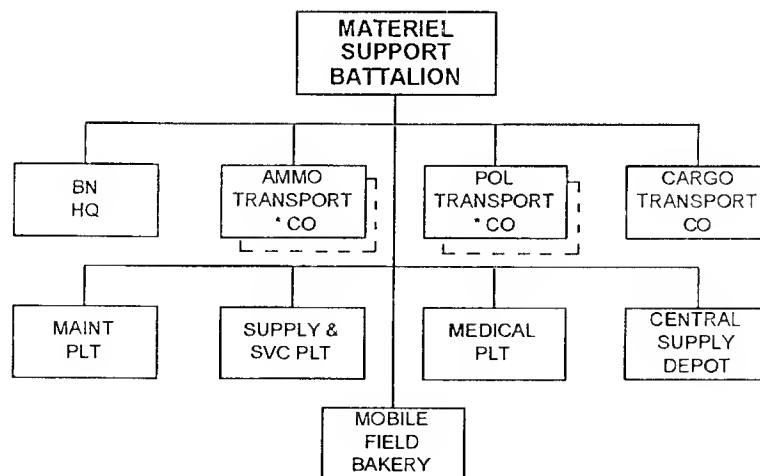
NOTE: * Mechanized divisions have 2 ammunition transport companies and 2 POL transport companies.

Figure 12-5. Materiel support battalion, (district and division).
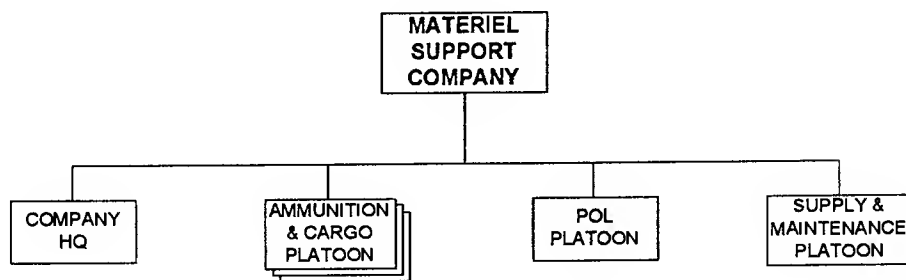
Figure 12-6. Materiel support company, brigades.

Division Trains

Units at each level carry a combination of supplies enabling them to perform their mission without resupply for a specific period of time. However, the supply system moves commodities forward and delivers them daily. See the discussion on sustainability above. Figure 12-7 shows the locations of tactical logistics elements of a division in the offense.

A division deploys to the field with its entire initial supply. Additional supplies for divisional brigades come from the division trains. For separate brigades, they come from district. The division trains bring the additional stocks forward and stockpile them at the trains site, to issue daily to the committed battalions.

Unit	Logistics Element	Distance from Forward Edge
Company	Ammunition Supply Point	
	Ration Supply Point	
	Maintenance Observation Point	
	Medical Evacuation Point	
Battalion	Battalion Trains	4 to 5 km
	Ration Supply Point	4 to 5 km
	Refueling Point	4 to 5 km
	Maintenance Observation Point	1.5 to 3 km
	Repair and Evacuation Group	4 to 5 km
	Medical Section	4 to 5 km
Brigade	Brigade Trains (Materiel Support Co)	10 to 15 km
	Ammunition Supply Point	10 o 15 km
	Ration Supply Point	10 to 15 km
	Medical Platoon	5 to 7 km
	Repair and Evacuation Group	5 to 7 km
	Refueling Point	10 to 15 km
Division	Division Trains (Materiel Support Bn & Maintenance Bn)	20 to 30 km
	Supply (Ammunition, POL, Rations)	20 to 30 km
	Damaged Vehicle Collection Point	10 to 15 km
	Repair Point *(Tracks,* weapons*)*	20 to 40 km
	Repair Point (Wheeled vehicles)	10 to 15 km
Note: Italics indicate those functions probably found in a mechanized unit rather than motorized.		

Figure 12-7. Locations of divisional logistics elements in the offense.

Tactical combat service support elements are completely mobile. Division materiel support battalions move forward once or twice a day behind first-echelon brigades. The materiel support battalion consolidates its major elements at the end of each 24-hour period. From the division trains, the supplies move to the brigade trains. The brigade, like division, maintains the supplies on vehicles. With the supplies carried for organic elements and those maintained for use by subordinate units, the brigade is able to conduct combat for 3 days. From the brigade trains, organic cargo vehicles transport supplies to the subordinate battalions. In some cases, the second-echelon brigade picks up its own supplies with organic transportation assets. This releases the division's materiel support battalion's vehicles to support the priority first-echelon brigades.

Brigade Trains

The brigade trains establish--
- An ammunition supply point.
- A refueling point.
- A ration supply point.
- A repair and evacuation group (REG).
- An ordnance repair team.
- A vehicle repair team.
- A medical platoon.

Brigade and battalion maintenance consists of minor automotive and ordnance repair and parts replacement only; all else requires evacuation to the district or division. Operators perform field maintenance. See the section on maintenance later in this chapter.

Battalion Trains

Battalion logistics support is self-contained. The service platoon maintains the supplies and transports them on battalion vehicles. The battalion maintains prescribed norms of supply for all classes of materiel, with replenishment provided directly by brigade or division logistics element. The battalion chief of staff is the organizer of logistics functions. The service platoon leader is also responsible for the receipt, storage, and delivery of supplies to companies. He also deploys and operates the battalion ammunition, fuel, and ration points.

The brigade commander designates the location of the battalion trains. Normally they locate from 10 to 15 km from the forward edge. Stocks maintained at battalion include ammunition, POL, rations, and other high-expenditure items. Armored personnel carriers or supply bearers deliver these items to companies and batteries.

At **tank and infantry battalion level**, the following personnel assist the commander:
- **The battalion chief of staff** (similar to U.S. battalion executive officer) serves as the principal assistant for organizing and administering battalion rear area support.
- **The battalion maintenance officer** is responsible for organization and control of maintenance, repair, and salvage of both combat and noncombat vehicles.

- **The battalion service platoon commander** orders, stores, and distributes all supplies and equipment. He commands a service platoon consisting of a mess section, a motor transport section, and a supply and service section. The motor transport section operates the battalion's cargo (ammunition) and POL trucks.

At **company level**, a company maintenance officer assists the commander in logistics. The company maintenance officer supervises weapons crews in field maintenance and light repair. If there is no maintenance officer, the first sergeant, accountable for company-level supply, performs this function.

MAINTENANCE

Maintenance is the maintaining and repair of equipment and weapons as well as other specialized measures associated with preparing equipment and weapon systems for employment. The supply of major end items (for example tanks, artillery, etc.) is also a responsibility of the maintenance system.

The scope and content of maintenance support to maneuver units depend on the--
- Nature of combat actions.
- Mission being performed.
- Position in the unit combat formation.
- Nature of terrain.
- Time of year and day.

Principles

- Provide maintenance support during battle.
- Ensure priority support to priority missions.
- Position maintenance and recovery operations forward.
- Accompany supported units.

Vehicle Maintenance

The OPFOR classifies vehicle maintenance as routine, medium, or capital.
- **Routine repair** involves the replacement, adjustment, or repair of individual components requiring little time.
- **Medium Repair** involves the major overhaul of at least two basic assemblies. Brigades or division level maintenance performs this category of maintenance.
- **Capital Repair** involves the major overhaul or complete disassembly of a piece of equipment. This is the most extensive category of repair the OPFOR perform. It corresponds to the highest echelons of U.S. repair. Levels above division perform capital repair.

Vehicle Maintenance Services

In addition to the three major repair categories, the OPFOR uses periodic checks of equipment known as maintenance services. (See Figure 12-8.) The OPFOR has four kinds of servicing and maintenance services for armored vehicles and trucks:
- The operator performs a **visual inspection** at short stops in the course of a march, in rest areas, and whenever possible during battle. Weapons and vehicles receive service and maintenance after every 3 to 4 hours of movement. The visual inspection averages 15 to 30 minutes for all makes and types of vehicles.
- **Daily routine servicing and maintenance** occur prior to each movement.
- **Periodic servicing and maintenance inspections No. 1 and 2.** These are time intensive and performed at brigade and higher.

Vehicle Make	Daily Routine Servicing and Maintenance	Periodic Servicing and Maintenance Inspection No. 1		Periodic Servicing and Maintenance Inspection No. 2	
	Duration, (hrs)	Frequency, (km)	Duration, (hrs)	Frequency, (km)	Duration, (hrs)
T-72	1.5	1,600-1,800	4.5-5.5	3,300-3,500	10-12
T-64	3.5	2,500	9-10	5,000	13-14
T-62	2.5-3.5	1,000	5-6.5	2,000	8-12
BMP	2-3	2,500-2,600	5-6	4,800-5,000	8-10
BTR-80	1.1-1.6	2,000	1.8-2	6,000	6.4-6.6
BTR-70	3	2,000	7-8	6,000	14
Trucks	1-2	1,200-1,800	5-6	6,000-9,000	14

Figure 12-8. Frequency and duration of servicing and maintenance of example equipment.

Rotation of Equipment

The OPFOR does not necessarily repair an item of equipment and then return it to the unit of origin. Instead, items return to an equipment pool for allocation as priorities dictate.

Maintenance Facilities

Maintenance facilities in the field provide maintenance for the following items of equipment:
- Tracked vehicles.
- Wheeled vehicles.
- Artillery and ordnance.
- Engineer equipment.
- Signal equipment.
- Chemical equipment.

Fixed and mobile repair facilities extend the repair capabilities forward into the battle area.

Organizational Maintenance Capabilities

Division Level

At the division level, the **maintenance battalion** is responsible for all repair work. The organization of the maintenance battalion depends on the type division it supports. See the *Light OPFOR Organization Guide* for specific organization. Mechanized infantry divisions have three tank/track maintenance companies, one motor vehicle company, and a recovery platoon (armor). Light and motorized infantry divisions may have two motor vehicle maintenance companies, a recovery platoon (truck), and a tank/track maintenance company. Light infantry divisions may only have one of each type. Within the companies, there are--
- Shop vans.
- Supply trucks.
- Armored recovery vehicles in tank and mechanized units.
- Tow trucks.

The companies can perform routine and medium repairs. In combat, these companies establish damaged vehicle repair and collection points that are similar to brigade repair and evacuation groups (REGs).

Brigade Level

The maintenance company performs routine and some medium repair functions. The organization of the maintenance company depends on the type brigade it supports. See the *Light OPFOR Organization Guide* for specific organization. Maintenance companies in mechanized infantry and tank brigades con-

sist of a motor vehicle repair platoon, a tank/track repair platoon, a weapons/ordnance repair platoon, special repair platoon, and a recovery platoon (armor). IFV-equipped brigades also have a mobile repair workshop/platoon. Motorized infantry brigades do not have a tank/track repair platoon or an armored recovery vehicle in the recovery platoon in the maintenance company unless the brigade has a mechanized battalion assigned. Light infantry brigades do not have a tank/repair platoon or a recovery platoon (armor). Each brigade forms REGs to provide support to subordinate battalions.

Battalion Level

The maintenance platoon in the mechanized infantry battalion contains a motor vehicle repair section, a tank/track repair section, and a weapons and ordnance section. This allows it to make routine repairs to tracked and wheeled vehicles and minor repairs to weapons. Light infantry and motorized infantry battalions do not have a maintenance platoon and have a limited maintenance ability. Vehicles receive maintenance from the brigade. In battle, a maintenance observation point is established. See the "Maintenance Observation Point" portion of this chapter.

Company Level

Only driver and crew preventive maintenance and routine inspections occur at company level. Vehicles receive service and maintenance in their combat formations. The commander establishes the sequence of servicing and maintenance, and the time allocated. When performing servicing and maintenance, two-thirds of the vehicles must always be in full combat readiness.

Maintenance of Weapons and Equipment

The chief of artillery at brigade and above is responsible for the maintenance of small arms, automatic weapons, mortars, artillery, and missiles. Infantry brigades usually have two or three armorers located at the brigade ammunition dump to perform light repair on small arms and on some automatic weapons. Armorers in artillery regiments can do routine maintenance on artillery pieces as well as on small arms. At division level, the ordnance maintenance company of the maintenance battalion can make routine to medium repairs. Artillery repair at brigade and division consists primarily of replacing parts from available stocks.

Brigades have a signal company subordinate. The operators repair signal equipment whenever possible. Radio, telephone, and radar units generally have some testing equipment and spare parts for routine repairs. Division-level maintenance does medium repairs. Units above division level perform capital repairs. Engineer and chemical equipment maintenance and repair follow the same pattern as signal equipment at division and higher echelons.

Recovery and Repair During Combat

Mobile repair teams perform repairs during combat. Those items requiring the least amount of work receive priority of repair. All vehicle and weapons crews accompany their equipment back through evacuation channels and assist in the repair of their equipment, unless the equipment requires major overhaul. In the offense, the division repair point for tanks and weapons locates from 20 to 40 km from the forward edge. The divisional wheeled motor vehicle repair point locates from 10 to 14 km from the forward edge.
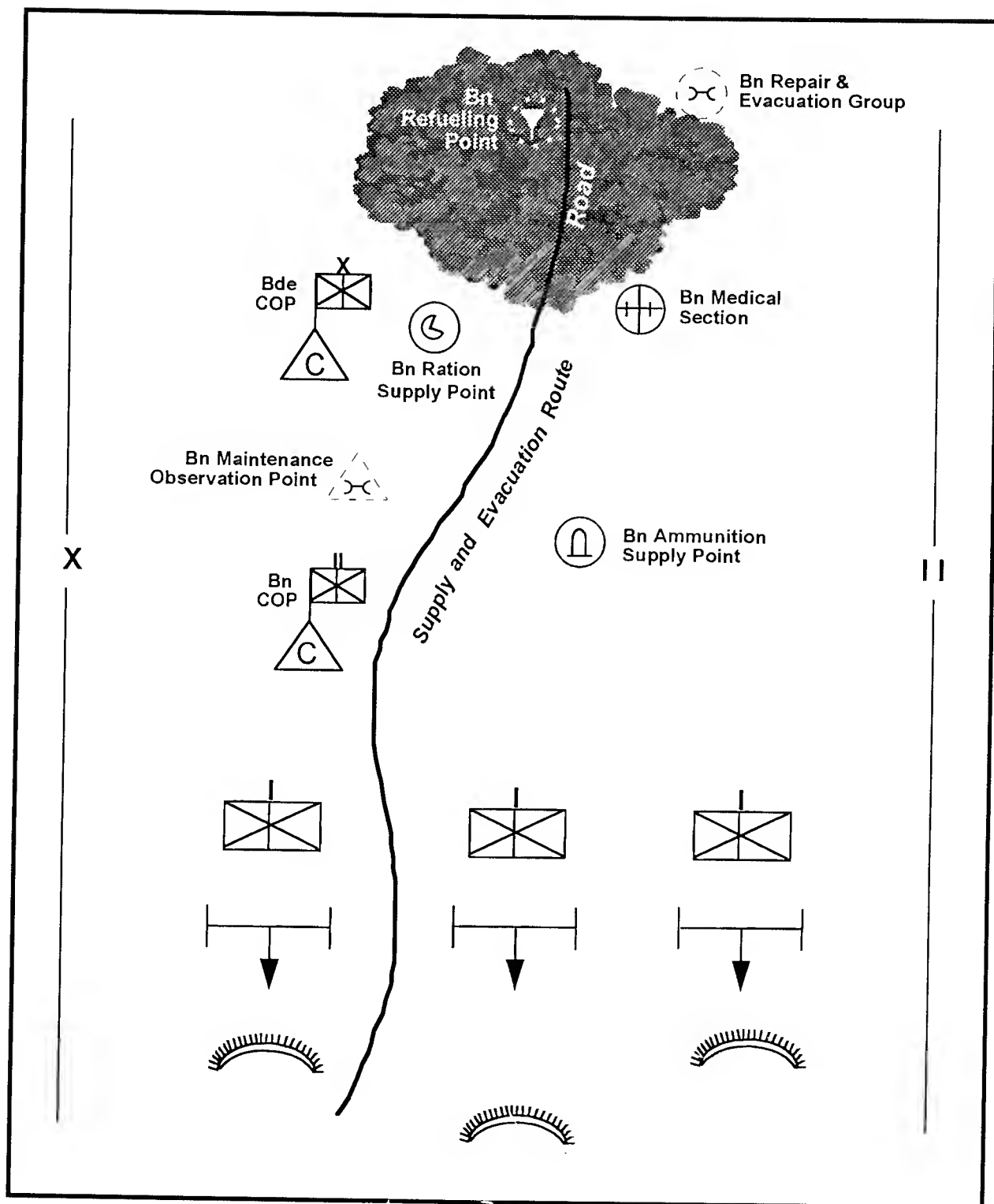
Figure 12-9. Brigade logistics support in the offense.
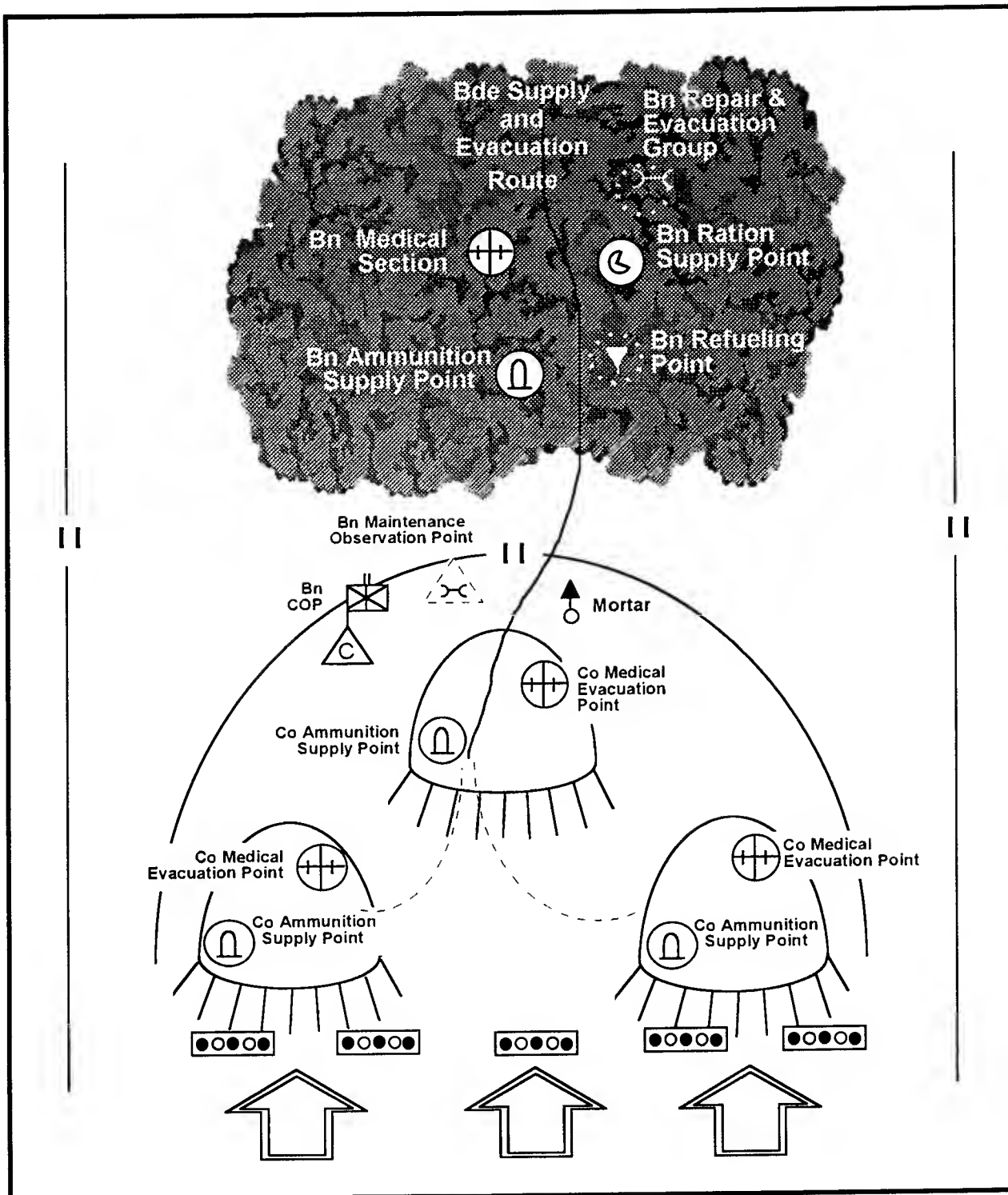
Figure 12-10. Brigade logistics support in the defense.

Maintenance Observation Point

During the battle, the battalion commander establishes a maintenance observation point (MOP) in the forward area of each combat battalion. See Figure 12-9 and Figure 12-10. The function of the MOP is to--

- Detect disabled weapons and vehicles.
- Determine the causes, nature, and degree of their damages.
- Determine the extent of work and resources required to repair them.
- Determine locations of the recovery and repair teams/parties.

The chief of the MOP maintains communications with--

- The battalion COP.
- The battalion and brigade REG.
- Fighting vehicle commanders.

Several vehicle operators, one or more mechanics, a medic, the battalion NBC instructor, and at least one combat engineer compose the MOP. The MOP may have spare crews with it. The battalion maintenance officer supervises the MOP. The MOP operates from a vehicle equipped with radios and night vision devices. The MOP maintains radio contact with the battalion commander and with the recovery and repair elements. Companies may establish MOPs if the battle area is beyond observation of the battalion MOP or if the company is operating on a separate axis. Company MOPs cease their activities when the battalion's combat formation becomes visible from one point.

Upon completing the initial inspection, the MOP initiates action to recover the vehicle and accomplish repairs. If able to repair the vehicles in 5 hours or less, the battalion REG repairs the vehicle on site or evacuates it to the brigade REG. The REG of a mechanized (IFV) infantry brigade has one tracked recovery vehicle, a track mobile repair work-shop, and a parts truck. Brigade REGs may support a specific battalion if required. Motorized brigades may not require a REG.

Flow of Battlefield Repairs

The following steps explain the flow of repairs on an armored vehicle damaged in the company battle area. Figure 12-11 illustrates the process.

Step 1. The armored vehicle has stopped, or is damaged and not in danger destruction or capture by the enemy. The chief of the MOP determines the cause(s) of the stoppage. He also determines the degree of damage and the condition of the crew.

Step 2. The chief of the MOP instructs the battalion REG to repair armored vehicles on the spot if the repairs exceed the capability of the crew, but still require less than 5 hours. If the vehicle is still in danger of receiving enemy fire, the REG evacuates it to an area providing cover prior to starting repairs. When several vehicles are out of action simultaneously, priority of evacuation goes to vehicles still under enemy fire. The REG first repairs vehicles with minor damage and quickly returns them to the line.

Step 3. If the battalion REG cannot repair a vehicle within 5 hours, it may tow it along an evacuation route to cover. Alternately, it may tow the vehicle to the nearest evacuation route for transfer to the brigade's REG.

Step 4. If a vehicle needs repairs beyond the brigade's capability, division assets evacuate it to a division damaged vehicle collecting point (DVCP). The division maintenance shop repairs the vehicle.
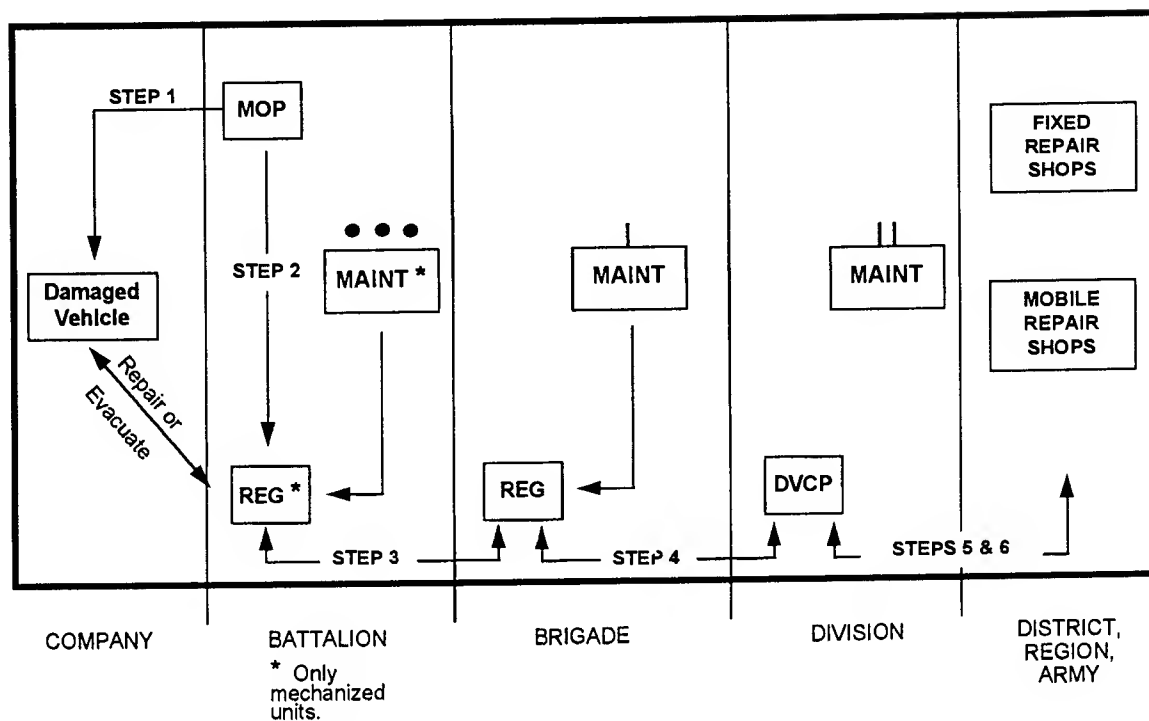
Figure 12-11. Flow of an armored vehicle damaged on the battlefield.

Steps 5 and 6. When repairs exceed the capabilities of division resources, a higher unit's evacuation resources become necessary. The higher unit's evacuation resources evacuate the vehicle to military district, military region, or army maintenance units for repair.

When the tactical situation does not allow evacuation of the damaged vehicle(s) from lower to higher echelons, the lower unit leaves the vehicle(s) positioned along an established route. Higher-level units then repair or evacuate these vehicles once maintenance teams arrive at the site of the vehicles. In some cases, the higher level unit may already be providing direct or backup support (though mobile teams) in the lower unit's area. In these instances, the higher unit's mobile team can remain behind to complete the repair of equipment as the lower unit moves forward in support of frontline combat units.

MEDICAL

Medical support includes the combat medical measures required for the evacuation and treatment of combat and non-combat casualties and for the prevention of disease.

The two principle missions of the OPFOR **military medical service** in combat are the evacuation and treatment of casualties, and the prevention of disease in the battle area. The medical service also has responsibility for monitoring and maintaining adequate health conditions within the battle area. Basically, the OPFOR medical service is responsible for the medical combat readiness of the military.

Evacuation and Treatment

The basic principle of OPFOR combat medical support is **multistage evacuation with minimum treatment at each level**. (See Figure 12-12.) From company through army or military region, each level has specific responsibilities for the care of the sick and wounded. As casualties move through the combat evacuation system, medical personnel at each level make effective use of medical facilities by repeated sorting of the wounded (triage). Combat medical doctrine stresses the timely return of recuperated sick and wounded to their units. Consequently, at each stage of evacuation, medical personnel detain and accommodate those casualties whose expected recovery period falls within prescribed limits. Others must wait for treatment after evacuation to a higher level. Only casualties whose prognoses indicate extended recovery periods reach a military region field hospital.

In the defense of the State, **fixed facilities**, clinics, and hospitals in the military regions and districts augment the military medical system. Civilian medical facilities expand during mobilization to meet the increased wartime needs. Whenever possible, military units send their casualties to these civilian facilities. This is possible because the units are still in the State and receive support from the local populace. Divisions subordinate to the expeditionary army in the offense rely solely on the military medical system once they leave State territory.

The **expeditionary army** deploys independent medical detachments and ambulance units to closely support first-echelon divisions. The **medical battalion** or company of each division (together with medical elements at lower elements) can perform direct care and evacuation functions.
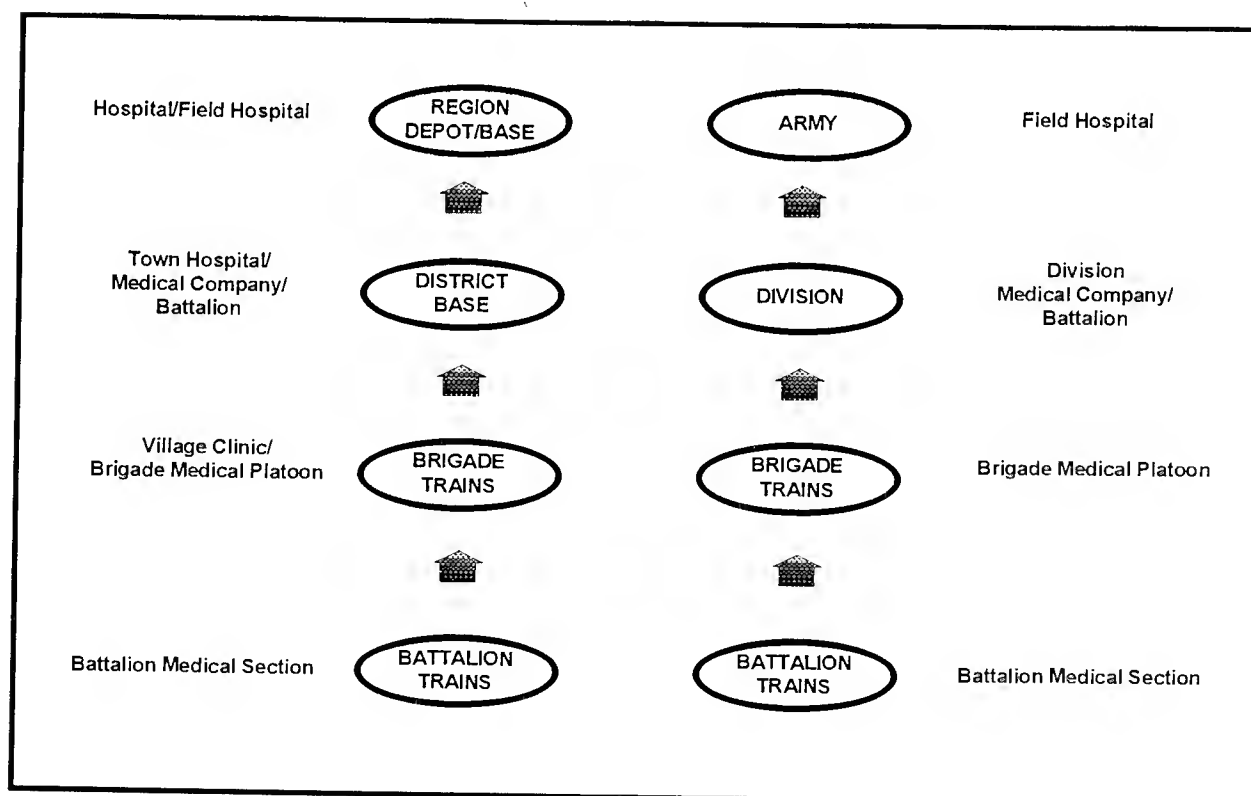
Figure 12-12. Medical evacuation.

This network of medical units and facilities provides medical support from tactical levels to permanent medical facilities deep in the State. Deployed hospitals and units of forward field hospitals directly support army and divisional medical resources. These field hospital(s) locate in the areas of greatest casualties. They deploy approximately 40 to 50 km from the forward edge.

Organic medical units support tactical units, divisions and below. The mechanized infantry division may have either a medical battalion or a medical company. (See Figures 12-13 and 12-14.) Motorized infantry and light infantry divisions have a medical company organic. The motorized infantry brigade has a medical platoon organic to it. The brigade **medical platoon** is a sorting point, with either a doctor or physician's assistant. In the defense, the brigade medical platoon would attempt to colocate with a village clinic.

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                    │  BATTALION  │
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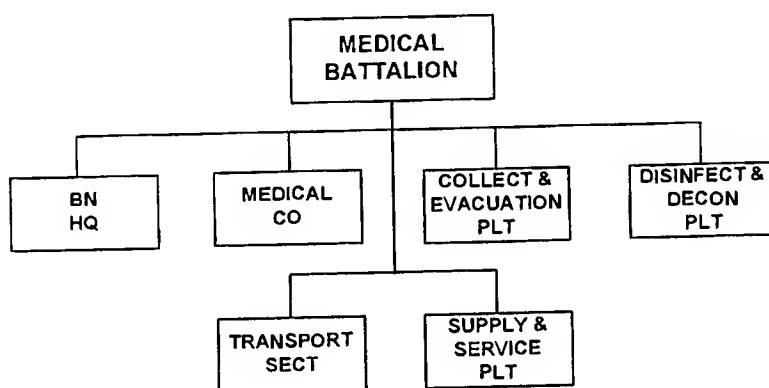
NOTE:

1. Only mechanized infantry divisions sometimes have medical battalions. Some mechanized divisions have only medical companies, like the one shown in Figure 12-14.

Figure 12-13. Medical battalion, mechanized infantry division.

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                    │   MEDICAL   │
                    │   COMPANY   │
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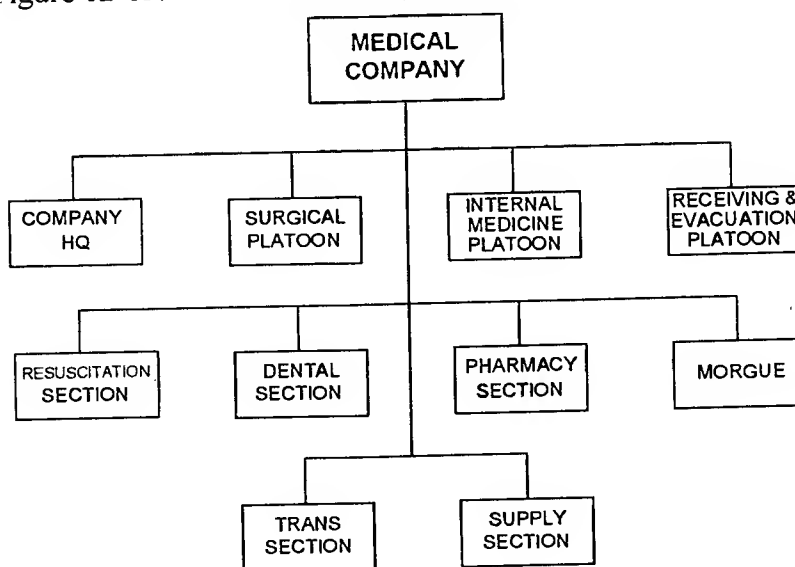
Figure 12-14. Medical company, motorized and light infantry divisions.

Ambulances transport patients requiring immediate evacuation to district/division. Supply vehicles going back to the rear for more supplies carry noncritical routine cases and excess. The brigade ambulance element serves the battalion medical evacuation points. Air ambulance evacuation by helicopter or light aircraft from brigade is possible, but resource-constrained. Excess casualty evacuation uses supply trucks and stretcher bearers. All empty vehicles going to the rear carry evacuated casualties and freight. By using the forward distribution system of dropping off supplies and going back to the rear for more, evacuation by motor vehicle is normally not a problem. Patients expected to return for duty within 72 hours remain at brigade. If the brigade medical platoon displaces, it turns its patients over to the relieving unit or evacuates them to the rear.

Battalion **medical sections** have either a nurse or physician's assistant. Units below battalions have a corpsman. Casualties released as fit for service return to their units if the tempo of combat permits. If the situation does not permit, the casualties augment reserve and mobilizing units.

Combat medical doctrine emphasizes the importance of self-help and mutual aid among individual soldiers. The concept of self-help and mutual aid extends beyond the battlefield to the casualty collection points and the medical evacuation point. Each soldier has a packet of field dressings and an NBC protection kit. He also receives a required number of hours of first-aid training each year and may assist in treating wounded.

Disease Prevention

To the OPFOR, prevention of disease primarily means field sanitation. Commanders are the executive authority for this, and a prescriptive regulation defines responsibilities down to the squad level. Medical personnel organic to the organization are responsible for this function. The OPFOR medical service treats disease through normal medical channels.

REAR AREA

The tactical rear is at military district, division, and lower. Tactical logistics support meets the immediate combat needs of supported units. Rear area support provides materiel, maintenance, and medical support to forces engaged in combat. The OPFOR expects their logistics requirements to be quite large when their offense is in the initial stage. After penetrating enemy border defenses, logistics requirements will lessen because attacking forces will encounter less organized resistance. The increasing distances required to support a mobile force complicate logistics support.

Security

All units, from the smallest through army level, are responsible for the security of their own rear areas. The commander determines the composition of the rear area reaction force based on his mission and committed forces.

Organic personnel and equipment carry out basic security and damage control in the rear area. Appropriate measures include the following:

- Comprehensive security plans.
- Locate support units near combat troops for added protection.

- Temporary assignment of combat units as a reaction and antilanding force for rear area security. These are usually second-echelon elements.
- Employment of guards, sentries, and patrols.
- Emergency use of weapons and equipment undergoing repair. Crews generally remain with the equipment during repair under these conditions.
- Use of convalescent sick and wounded for defense during critical situations.
- At brigade and division, air defense elements locate to provide thorough coverage of the entire battle area.
- Combat support and combat service support elements also have rear area security responsibilities from the rear area of first-echelon units in contact to the rear boundary of the parent brigade or division.

Command and Control

The commander's tactical requirements determine rear area **command and control**. At brigade and division the commander may make these decisions or delegate this responsibility to his **chief of the rear**. Brigades and above have small staffs to coordinate the activities of all combat services at their respective levels. However, their basic command responsibility changes for rear area security. If the situation dictates, tactical units receive rear area security missions under the operational control of the chief of the rear. There is no chief of the rear (deputy commander for the rear) lower than brigade. The unit commander below brigade is his own manager of rear area activities. Specific rear area decisions include--

- Designating deployment areas and direction of movement for logistics elements.

- Determining supply and evacuation points.
- Specifying medical and maintenance support.
- Establishing rear area security measures.
- Designating initial and subsequent locations of the rear CP.

The rear area commander coordinates basic rear support matters with the unit's chief of staff and branch chiefs. He keeps them updated on equipment status, availability of reserves, and medical support. The chief of staff, in turn, provides the rear area commander with timely information regarding the mission and the commander's decisions.

Division and brigade rear CPs have fully mobile communications facilities. Division rear CPs position approximately 30 km behind the forward edge. Brigade rear CPs position approximately 15 km behind the forward edge.

The rear area commander conducts command and control of military district rear operations from the rear CPs. The military districts generally establish their rear CPs at the capital of the military district. Although the CPs for the district rarely moves, in emergencies they relocate.

All echelons down through brigade have rear CPs. A rear CP must be able to communicate with the parent unit and with subordinate, adjacent, and higher rear CPs. CP personnel include--
- Chief of the rear and his staff.
- Communications.
- Transportation.
- Security.
- Traffic control troops.

12-19

At division and brigade, the chief of the rear (deputy commander for the rear) supervises a staff that includes deputies for food, POL, and clothing. He and his deputies coordinate with--

- Engineers.
- Signal.
- Transportation.
- Chemical.
- Logistics.

Force Reconstitution

At the tactical level, force reconstitution is basically **reorganization** by the tactical commander. This "tactical reconstitution" occurs at brigade level. As brigades experience combat losses, the commander must decide whether to reorganize or to withdraw a subunit for reconstitution. Brigades normally reorganize their battalions internally when attrited to half strength. The commander may consolidate two battalions, or he may pull the weakened battalion off line and send it back for reconstitution. When reconstituting, the battalion withdraws along the lines of communication toward the district base, or brigade rear. The battalion then establishes an encampment and awaits replacements. If engaged, the battalion assumes an area defense. The brigade may also establish provisional infantry companies with returned wounded or stragglers. It can also form such companies from the assets of smaller units that have lost their primary equipment, such as engineers, air defense, and support troops.

Individual fillers replace personnel losses. When units become attrited below 50 percent, the unit commander may reconstitute his units to maintain combat effectiveness.

The OPFOR is keenly aware of the dependence of modern military forces on **communications** that support command, and control (C^2) and intelligence. Effective communications contribute to sound C^2; the loss of communications is the loss of C^2. The loss of C^2 in combat ultimately ends in defeat. The OPFOR seeks to control the electromagnetic spectrum and deny it to its enemy during combat actions. As a result, the OPFOR is actively acquiring systems to degrade the C^2 assets of enemy forces.

The OPFOR recognizes the importance of what its enemy calls electronic warfare (EW). The OPFOR has a wide variety of assets for signals reconnaissance. This includes assets for --
- Radio reconnaissance (radio intercept and direction finding [DF]).
- Radar reconnaissance (radar intercept and DF).

The OPFOR has made significant technical advancements in signals reconnaissance and jamming. In particular, it has modernized those systems that can disrupt enemy communications and electronics through jamming and deception. The OPFOR has developed its capabilities into an integrated system called **electronic combat (EC).**

EC consists of the use of all means of manipulation of electronic emissions throughout the electromagnetic spectrum. EC objectives are to limit, delay, or nullify the enemy's use of his communications systems, and at the same time protect OPFOR systems. EC supports all types of offense and defense actions. It includes jamming of radios and radars, as well as the physical attack of communications centers and transmitters by ground troops, artillery, and aircraft. Destruction by fires is the preferred EC method. The OPFOR also places emphasis on electronic protection measures (EPM). It accomplishes EPM through--
- Strict enforcement of signal security.
- Equipment redundancy.
- System design.
- Operator skill.

ORGANIZATION

Currently, a multitude of equipment and systems of varying levels of technology are available for purchase on the world market. These systems are capable of providing any level of electronic intercept, direction finding, or jamming sophistication required. In light of this, the OPFOR has been upgrading its EC systems and technology to supplement its aging equipment. The older systems focused on small-scale tactical uses. The **Directorate of Military Intelligence (DMI)** has centralized its control of the newer EC systems, except for naval, aircraft, and air defense unit countermeasures. See the *Light OPFOR Operational Art Handbook* for further information on the DMI. As the DMI acquires newer EC equipment, it transfers the older equipment to EC organizations at lower levels of command.

Signals Reconnaissance Battalions

One to three signals reconnaissance battalions are organic to the DMI. Although the composition and equipment strengths vary, the standard includes one radio intercept company, one radio DF company, and three radar

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                      │ RECONNAISSANCE   │
                      │   BATTALION      │
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   │   SVC CO     │  │  INTERCEPT  │  │   CO     │  │   & DF CO   │
   │              │  │     CO      │  │          │  │             │
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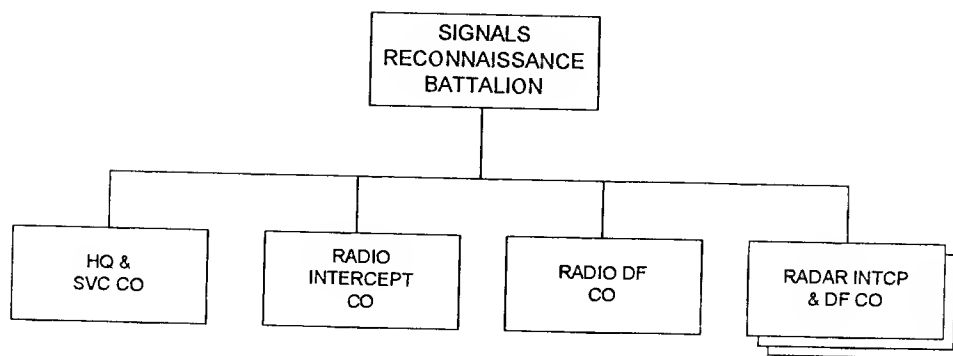
Figure 13-1. Signals reconnaissance battalion.

intercept and DF companies. The radio intercept company and radio DF company provide radio reconnaissance through the interception and DF of enemy radio communications. Radar intercept and DF assets provide radar reconnaissance through the interception and DF of radar signals.

The DMI may allocate these battalions as a whole to support a military region or army, or may allocate individual companies to these organizations to support specific missions or fulfill specific asset shortfalls. Regions or armies receiving these battalions either retain them or allocate them to subordinate districts or divisions. (See Figure 13-1.)

Reconnaissance and EC Battalions

Composition and equipment of reconnaissance and EC battalions of the DMI are almost identical to the battalions organic to some military districts, armies, and all infantry division structures. This includes two reconnaissance companies, one long range reconnaissance, one radio and radar reconnaissance company (intercept and DF capa-

bility), and one jamming company (radio jamming capability). A remotely-piloted vehicle (RPV) squadron is organic to the army and higher reconnaissance and EC battalions. District and divisional reconnaissance and EC battalions may or may not have an organic RPV squadron.

In addition to video and still cameras, an RPV may house a radio or radar reconnaissance system or a low-powered radio jammer. The chief of reconnaissance, division and higher, plans RPV missions. Flight profiles vary according to the mission. The RPV acquires or jams priority targets during these missions.

The DMI may allocate its reconnaissance and EC battalions to military regions or the armies during wartime. Regions or armies receiving these battalions either retain them or allocate them to subordinate districts or divisions. The division commander may allocate a reconnaissance and EC element to a brigade conducting a supporting attack. The division commander determines the composition of the element, to include jamming assets. (See Figure 13-2.)

13-2
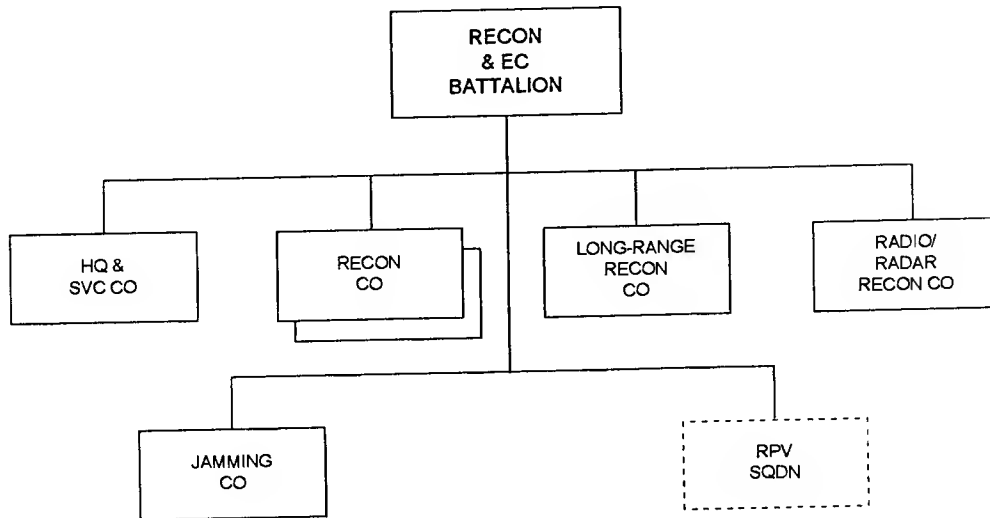
Figure 13-2. Reconnaissance and electronic combat battalion.

INTEGRATION AND PLANNING

Integration and planning are critical to the overall success of EC. The OPFOR planning process stresses close coordination between the reconnaissance, EC, and combat planners. This is to ensure the supported combat units receive massing of jamming and other resources at the critical times and places. It also ensures that a more complete interruption of enemy electronic control occurs through the combination of jamming with physical destruction. The OPFOR accepts that it is not possible to completely deprive enemy forces of their means of control for extended periods of time. Accordingly, OPFOR EC planners have established models to estimate "critical times" in C^2 procedures. These critical times are the total time needed to complete a series of steps in control:

- Collection and reporting of data.
- Evaluation and decision.
- Issuance of orders and preparation.
- Completion of action.

TARGET PRIORITIES

The OPFOR assigns enemy communication and C^2 nets a priority based on the expected impact on the battle. It selects targets with the intention of eliminating them either by **physical destruction** or by **jamming**. Although EC target priorities depend on the command level and can change as the tactical situation develops, they generally are:

- High-precision weapons systems.
- C^2 systems.
- Artillery, tactical aviation, and air defense systems.
- Reserves.
- Logistics centers.
- Point targets that jeopardize advancing forces.

INFORMATION REQUIREMENTS

Essential to the success of OPFOR EC objectives is the collection of accurate and timely information. The OPFOR requires information on the enemy's electronic order of battle, equipment types, emission characteristics, and locations. It obtains some technical

information concerning enemy electronic equipment from open-source material, such as technical manuals and field manuals. Reconnaissance, target acquisition, EC, and information-collection assets available at the various command levels collect the remainder. Signals reconnaissance (electronic intercept and DF measures) provides the primary means of locating targets of specific interest to the EC effort.

SIGNALS RECONNAISSANCE

Identification and location of enemy electronic emissions and understanding their nature and use are key to countering and exploiting them. **Signals reconnaissance** is the sum of all means used in this collection and analysis. In the OPFOR, signals reconnaissance is the mission of--

- The airborne signals reconnaissance assets of the Air Force.
- The **signals reconnaissance battalions** of the DMI.
- The **radio and radar reconnaissance company** of the reconnaissance and EC battalions of the DMI and some regions, armies, districts and all divisions.

The OPFOR deploys radio and radar intercept and direction-finding receivers as part of its collection effort. Specialists then perform technical analysis to identify high priority targets. In accordance with the EC plan, the specialists target emitters for destruction, deception, jamming, or further exploitation.

When radio and radar reconnaissance units support a particular brigade or higher organization, an EC liaison representative augments the organization's main command post. He passes targeting information to the artillery fire control system through the maneuver bri

gade's chief of reconnaissance. The DMI distributes targets of air interest directly to the Air Force.

The OPFOR has the ground-based capability to intercept and DF enemy emitters within the following distances from the forward edge of friendly troops:

- Artillery ground radar--about 25 km.
- VHF communications--about 40 km.
- HF ground waves--about 80 km.
- HF skywave--unlimited.

Mounting intercept and DF systems on airborne platforms greatly extends these ranges.

Priorities

The radio and radar intercept and DF priorities correspond to the maneuver commander's EC information requirements. In general, priorities of intercept and DF are similar in both the offense and the defense.

Radio intercept and **DF** priorities include--

- Reconnaissance C^2 nets.
- Artillery nets.
- Air defense nets.
- Maneuver force C^2 nets.
- Tank communications.
- Radio jammers.
- NBC communications.
- Engineer nets.

Radar intercept and **DF** priorities include--

- Radar jammers.
- Ground and battlefield surveillance radars.
- Target acquisition radars.
- Countermortar and counterbattery radars.
- Air defense radars.

Offense

In the offense, the intercept and DF assets locate with the organization conducting the main attack, normally behind the first-echelon forces. The unit commander coordinates with the chief of reconnaissance, located at brigade and higher levels of command, to ensure continuous coverage of the most critical sections of the battlefield. The signals reconnaissance battalion commander and his staff select alternate positions that have line-of-sight (LOS) along the avenue of approach. This enables the assets to leapfrog forward in support of the battle.

Defense

In the defense, the unit commander coordinates positioning of his assets with the chief of reconnaissance. Initially, the assets may locate within the security zone, behind the security-zone forces in their initial positions. The depth to which these assets position depends on the terrain and disposition of forces in the security zone. As security-zone forces fall back to their successive positions, signals reconnaissance assets fall back to previously reconnoitered positions offering good LOS. If deployed within the main defense belt, assets position behind the first-echelon battalions of the first-echelon brigades. They position on terrain offering good LOS and reposition frequently to avoid enemy EW activities and subsequent destructive fires.

DIRECTION FINDING

The purpose of DF is to locate transmitting enemy radio and radar emitters. The OPFOR DF capability is equivalent to that for intercept. The OPFOR uses DF to--

- Provide approximate locations of enemy electronic emitters.
- Provide locations that, when applied with intercept, terrain analysis, or other means, have sufficient accuracy to target with artillery fires.
- Develop a "picture" of the battlefield to reveal the locations and intentions of enemy units.
- Provide adequate locations for firing on most radars and jammers.

Because of the length of transmission, the peculiarity of their signal characteristics, and power output, it is easy to locate jammers and identify them as targets for attack by suppressive fires. Due to a radar's unique signal parameters, DF can locate radars with greater precision than it can for radio emitters, often within 50 to 200 meters. It is possible to evaluate information from DF resources quickly, but this usually requires further confirmation by other sources. DF targets within conventional artillery range receive priority. Among these, targets that are time-sensitive and considered a serious threat, receive priority and are candidates for immediate engagement. If an enemy emitter remains active for at least 25 seconds, the OPFOR targeting sequence can continue even after emissions cease.

Besides the targets located by DF, the OPFOR expects to develop other targets. It feels it can achieve this due to lax enemy communications security and poor electronic counter-countermeasures. This implies that good communications security and electronic protection measures can limit the effectiveness of OPFOR radio and radar reconnaissance. OPFOR intercept and DF equipment are also vulnerable to deception because it only locates electronic emitters, not necessarily units.

ELECTRONIC JAMMING

Another part of the EC concept is the requirement to jam enemy C^2 and weapon systems communications that the OPFOR cannot destroy by firepower. All types of electronic equipment are vulnerable to both jamming and deception. OPFOR **electronic jamming** disrupts enemy communications and electronics. The jamming mission belongs to the airborne jamming assets of the Air Force, ground-based radar jammers at national level, and the reconnaissance and EC battalions at national and some division and higher levels of command. Jamming secure voice and data-link burst communications may force the enemy to transmit in the clear for exploitation of combat information. Jamming can also aid in DF by forcing the enemy to transmit longer, allowing time for tip-off and multiple DFs. When not dedicated to a jamming mission, jammers may assist in radio and radar intercept. Jammers may also support EPM by providing a jamming shield to protect OPFOR communications from enemy EW efforts.

EC doctrine establishes a requirement to destroy enemy C^2 and weapons system communications. At critical times, the OPFOR can jam these communications when destruction is not possible. The primary OPFOR methods of jamming are--

- Radar jamming by using barrage, sweep, and spot noise, pulse, chaff, and decoys.
- Pulse and simulation jamming of command guidance systems.
- Radio jamming of AM and FM signals using barrage, sweep, or spot noise.

The OPFOR supplements its radio jamming capability with assets allocated down from national level. These may include a considerable number of airborne radio-jamming and ground-based and airborne radar-jamming sets. Aircraft and air defense units have self-screening jammers that attempt to disrupt enemy target acquisition radars, weapon guidance systems, or aircraft navigation aids. Aircraft also may have some deceptive transmitters, mainly to project false locations to enemy air defense systems. It continues to modernize its radar jamming assets in response to enemy advances in radar technology. This effort emphasizes the OPFOR intentions to disrupt enemy ground and airborne radar and support its own air activities and air defense of high-value rear area targets.

Effectiveness

Technical factors govern jamming effectiveness. The most important of these are the distances of the target receiver from the jammer and between the transmitter and receiver of the targeted enemy communications. The technical factors are--

- Target link distance (distance between the enemy transmitter and receiver).
- The distance between the jammer and the enemy receiver.
- Radio LOS between the jammer and the targeted receiver.
- Antenna polarization.
- Effective radiated power of the jammer and the enemy transmitter.
- Weather, terrain, and vegetation.

Deployment

Jammers are priority targets for destruction. Because of their high power and unique electronic signature, they are relatively easy to detect and locate. Ground-based jammers must deploy within the range of indirect fire weapons and are highly susceptible to damage. Taken together, these factors dictate the OPFOR must thoroughly plan and execute jammer deployment for their survival.

Jammers have to move to survive and to maintain favorable transmission paths against enemy radios that are moving as the battle progresses. A fluid, high-tempo battle requires the jammers to diplace frequently. The OPFOR preselects primary and alternate sites for each phase of the battle. These sites must--

- Be accessible and concealed from enemy direct fire weapons.
- Provide for continuity of mission.
- Facilitate electronic massing of several jammers against priority targets.
- Facilitate communications.

Priorities

Priorities for jamming vary with the tactical situation. The following are general guidelines for initial priorities:

- Attack enemy communications and command guidance systems for artillery, rocket, and surface-to-surface missile forces.
- Disrupt enemy communications, target acquisition, and guidance systems for air defense forces.
- Jam enemy critical C^2 links.
- Protect friendly C^2 systems.

Offense

In the offense, divisional jamming assets normally deploy slightly behind the forward maneuver units. Jamming assets position near the forward edge of the battle area and selectively jam critical communications links, normally using barrage and spot noise or pulse signals.

Defense

In the defense, jamming assets normally locate in the security zone and in the main defense belt behind the first-echelon battalions of the first-echelon brigades. They position on terrain offering good LOS and reposition frequently. In the security zone, priority is to enemy reconnaissance nets. As the enemy approaches the main defensive area, priorities shift to divisional and brigade-level fire support and maneuver nets, in that order.

ELECTRONIC PROTECTION MEASURES

Electronic protection measures (EPM) are any active or passive procedures to protect the friendly use of electronic systems. OPFOR commanders try to enforce a high level of EPM consciousness in their subordinates and equipment operators. The OPFOR objective for EPM is the satisfactory operation of its electronic equipment in the face of enemy disruption. EPM are the responsibility of every soldier who uses or supervises the use of radios, radars, or other electronic equipment.

The OPFOR achieves its EPM objectives through strict enforcement of signal security, equipment redundancy, system design, operator skill, and alternate methods of communication. It places emphasis on individual and organizational field-expedient techniques. Operator EPM training occurs at all organizational levels. The OPFOR practices major moves while in conditions of radio or even electronic silence. Its use of battle drills lessens its dependence on long, radio orders in the attack. The OPFOR employs alternate passive EPM, such as use of wire, visual methods, messengers, manual encryption or rarely, secure communications devices. It also practices false positioning of different types of emitters and establishes dummy nets for deception purposes. The OPFOR may protect its communications from enemy EW by using a jamming screen.

PHYSICAL DESTRUCTION

Integral to OPFOR EC doctrine is the use of **physical destruction**. The primary means of defeating enemy communications and radars is by destruction. Even a small raid or harassing fires on a headquarters can interrupt the enemy planning cycle. Critical C^2 nodes, air defense radars, satellite terminals, and enemy EW assets are priority targets. The OPFOR can physically attack in three ways:

- **Indirect fire**. This includes artillery, mortars, rockets, and surface-to-surface missiles.
- **Ground attack**. While fighting in the enemy's rear, the OPFOR may attempt to destroy C^2 and communications elements by using regular infantry forces, special operations forces, airborne or heliborne forces as raiding or enveloping detachments.
- **Air attack**. The OPFOR may attack with high-performance aircraft or helicopters. Ground forces may plant a transmitter within the enemy perimeter for beacon bombing.

DECEPTION

Deception in EC is part of an overall program the OPFOR calls camouflage, concealment, and deception (CCD). (See Chapter 15.) Regulations require planning for deception activities in all combat actions. The OPFOR seeks to confuse the enemy to the extent where the enemy is unable to distinguish between real and decoy targets. It believes that this will cause the enemy to come to false conclusions about OPFOR intent, deployments, and troop movements. The OPFOR employs several components simultaneously for maximum effectiveness.

While deception is a multi-disciplined part of the battle, no aspect more lends itself to use of deception than interference with enemy communications. In the overall category of deception, the purpose of electronic deception is to cause misinterpretations of intent, disruptions and delays. Electronic deception is normally part of an overall deception plan. This ensures that what the enemy collects electronically agrees with, or at least does not refute, the indicators presented by other deception means. The OPFOR seldom, if ever, uses electronic deception alone. Electronic deception normally consists of manipulative, simulative, and imitative deception. The OPFOR may use one or all of these types of electronic deception in their deception activities.

Manipulative Electronic Deception

The OPFOR uses manipulative electronic deception to counter enemy EW and collection efforts by altering the electromagnetic profile of friendly forces. Specialists in the reconnaissance and EC battalion modify the technical characteristics and profiles that provide an accurate picture of friendly intentions, or by deliberately transmitting false information. The objective is to have enemy analysts accept the profile or information as valid and therefore arrive at an erroneous conclusion concerning friendly activities and intentions. Common techniques include--

- Increased or decreased radio and radar communications levels.
- Controlled breaches of communications security.

The OPFOR may use controlled breaches of security to add credence to its simulative electronic deception activities.

Simulative Electronic Deception

Simulative electronic deception seeks to mislead the enemy as to the actual composition, deployment, and capabilities of the friendly force. Its tactics include the following:

Unit Simulation

The OPFOR establishes a network of radio and radar emitters to simulate those emitters and activities found in the specific type unit or activity. The OPFOR may reference the false unit designator in communications traffic and may add false unit callsigns to its CEOI.

New or Different Equipment Capability Simulation

The OPFOR projects an electronic signature of new or differing equipment to mislead the enemy into believing that a new capability is in use on the battlefield. To add realism and improve the effectiveness of the deception, the OPFOR may make references to "new" equipment designators on other or related communications nets.

False Unit Location

The OPFOR projects an electronic signature of a unit from a false location while suppressing the signature from the actual location. Radio operators may make references to false map locations near the false unit location, for example, hill numbers, a road junction, or a river. This would be in accordance with a script as part of the deception.

Imitative Electronic Deception

Imitative electronic deception injects false or misleading information into enemy radio and radar communications networks. The communications imitator gains entry as a bona fide member of the enemy communication system and maintains that role until he passes the desired false information to the enemy. The OPFOR exercises extreme care in entering the enemy communications system because each emitter produces its own signature. Most techniques require extensive technical support and specially trained operators.

The modern battlefield contains a variety of target acquisition, surveillance, and electronic radars. Each class of equipment produces an individual signature. The OPFOR uses repeaters, transponders, and reflectors that substitute an altered or generated-signal in imitation of the radar's normal return echo to deceive it. Successful deception requires a much better understanding of the technical characteristics of the enemy radar than that required for jamming.

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The OPFOR has no tactical nuclear or biological warfare capabilities. This chapter deals with a limited OPFOR chemical warfare capability, tactical NBC reconnaissance, and the employment of smoke at the tactical level. The *Light OPFOR Operational Art Handbook* contains operational-level NBC employment, doctrine, and capabilities.

NUCLEAR

The OPFOR has no tactical nuclear capability. The decision to employ nuclear weapons is a political decision made at the highest levels of government. Any use of nuclear weapons on the battlefield would be strategic, not tactical. For more information on OPFOR doctrine, capabilities, and possible strategic employment of nuclear weapons or devices see *Light OPFOR Operational Art Handbook*.

BIOLOGICAL

Biological weapons provide a great equalizer for countries that do not have nuclear weapons or that view their adversaries as too numerous or technically superior to engage in a conventional confrontation. Biological warfare involves the deployment of bacteria, viruses, rickettsiae, fungi, protozoa, and toxins from organic matter to produce death or disease in humans, animals, or plants. There is no evidence that the OPFOR possesses an offensive biological warfare capability. If the OPFOR decides to acquire or develop biological weapons, and subsequently to employ them, they would target the enemy's rear area. The decision to employ biological agents is a political decision made at the national level. For more information on OPFOR biological doctrine and a listing of acquirable or easily developed biological agents see *Light OPFOR Operational Art Handbook*.

CHEMICAL

To date, the OPFOR has only employed the riot control agents CS and DM. It's chemical industry, however, is fully capable of domestically manufacturing common agents, such as the GB series nerve agents, and blister agents. Some mustard and phosgene agents have been weaponized. Hydrogen cyanide may also have been weaponized.

Chemical Warfare Agents

The effects chemical agents have on organisms determine their classification. The OPFOR could readily acquire or develop, chemical agents belonging to the following four major types: **nerve, blood, blister,** and **irritant**. Figure 14-1 lists characteristics of example chemical agents.

Nerve Agents

Nerve agents are fast-acting chemical agents. Practically odorless and colorless, they attack the body's nervous system causing convulsions and eventually death. At low concentrations, the GB series incapacitates; it kills if inhaled or absorbed through the skin. The rate of action is very rapid if inhaled, but slower if absorbed through the skin. The OPFOR has the potential for G series nerve agent development and stockpile.

Type Agent	Symbol/Name	Symptoms in Man	Effects on Man	Rate of Action
Nerve	G Series GB/Sarin GD/Soman (VR 55)	Difficult breathing, sweating, drooling, nausea, vomiting convulsions, and dim or blurred vision.	At low concentrations, incapacitates; kills if inhaled or absorbed through the skin.	Very rapid by inhalation; slower through skin (5-10 minutes).
	V Agent	Same as above.	Incapacitates; kills if contaminated skin is not decontaminated rapidly.	Delayed through skin; more rapid through eyes.
Blood	AC/Hydrogen cyanide	Rapid breathing, convulsions, coma, and death.	Incapacitates; kills if high concentration is inhaled.	Rapid
Blister	HD/Mustard HN/Nitrogen Mustard L/Lewisite HL/Mustard and Lewisite CX/Phosgene Oxime	Mustard; nitrogen mustard-no early symptoms. Lewisite and mustard-searing of eyes and stinging of skin. Phosgene oxime-powerful irritation of eyes, nose and skin.	Blisters skin and respiratory tract; can cause temporary blindness. Some agents sting and form wheals on skin.	Blister delayed hours to days; eye effects more rapid.
Incapacitants	BZ	Slowing of mental and physical activity; disorientation and sleep.	Temporarily incapacitates.	30-60 minutes.
Irritant	DA/Diphenylchloroarsine DM/Adamsite CN/Chloroacetophenone CS/OChlorobenzal-malononitrile PS/Chloropicrin	Causes tears, irritates skin and respiratory tract.	Incapacitates, non-lethal.	Very rapid.

Figure 14-1. Characteristics of example chemical agents.

Blood Agents

Blood agents block the oxygen transferal mechanisms in the body leading to death by suffocation. Hydrogen cyanide serves as a common blood agent. It kills quickly and dissipates rapidly. Phosgene damages the lungs.

Blister Agents

Blister agents can disable or kill af-ter--

- Contact with the skin.
- Being inhaled into the lungs.
- Being ingested.

Contact with the skin can cause painful blisters or blindness after eye contact. These agents are especially lethal when inhaled.

Irritant Agents

Irritant agents, such as riot control CS and DM/Adamsite agents, cause a strong burning sensation in the eyes, mouth, skin, and respiratory tract. Tear gas is the common irritant agent with temporary effects. Victims recover completely without having any serious after effects. The OPFOR uses these agents, in small quantities, for training and for immediate crowd control.

Chemical Agent Classification

The OPFOR classifies chemical agents as **persistent** or **nonpersistent**. Persistency is the length of time an agent remains effective in the target area after dissemination. Persistent agents, such as some G-agents, and the blister agent mustard, can retain their disabling or lethal characteristics depending on environmental conditions for days, weeks, and in some cases, years. By contrast, the non-persistent agent GB evaporates at about the same rate as water. Nonpersistent agents generally last a shorter period of time, depending on weather conditions. GB clouds capable of producing significant casualties will dissipate within minutes after dissemination. Some liquid GB will remain in chemical shell or bomb craters for periods of time varying from hours to days, depending on the weather conditions and type of munition. (See Figure 14-2.) Because of this continuing but not readily discernible threat, GB can also be highly effective in harassing roles by causing exposure to low concentrations of the vapor. Rounds fired sporadi-

cally may compel the enemy to wear protective tasks and clothing for prolonged periods, thereby impairing his effectiveness as a result of--

- Fatigue.
- Heat.
- Stress.
- Discomfort.
- Decreased perception.

Employment

Initially, the National Command Authority makes the decision to use chemical weapons. Once the initial authorization to use chemical weapons is issued, chemical weapons may be used more freely. The OPFOR does not use chemical weapons within the boundaries of the State. They would only contaminate their own soil in order to preserve the State. If national authorities order the use of chemical weapons on the battlefield, a chemical weapons plan is part of the fire support plan. Chemical fire planners must consider the nature of the target, weather, agents, and delivery systems available.

Chemical Agent	Toxicity
Nonpersistent	
Diphenyl choroarsine (DA)	Low
Diphenyl cyanoarsine (DC)	Low
Adamiste	Low
Tabun (GA)	Low
Sarin (GB)	Low-medium
Hydrogen cyanide (AC)	Low-medium
Medium Persistence	
Psychochemical (BZ)	Low
Tear gas (CS)	Low
Soman (GD)	High-medium
Highly Persistent	
Sulfur mustard (H)	Low
Phosgene oxime (CX)	Low
Nitrogen mustard (HN-3)	Low-medium
GF	High-medium
VX	High

Figure 14-2. Toxicity of example chemical agents.

Chemical Weapons

The OPFOR could use virtually all of its weapons systems, from mortars and howitzers to aerial bombs to missiles, and aerosol sprayers to deliver chemical warfare agents. Figure 14-3 lists a sample of chemical munitions the OPFOR could readily acquire or develop, and a list of possible delivery systems. Chemical munitions have long or short bursters, according to the agent properties and the chemical strike planner's intended effect. A filled munition with a long burster releases the agent as a vapor or fine aerosol. This creates and immediate inhalation hazard with some of the fragmentation effect of a conventional munition. A 152-mm howitzer battalion firing GB rounds for one minute, could effect an area of 650 meters by 450 meters.

Either fixed- or rotary-wing aircraft can **deliver chemicals by air**. Helicopters are not armed during these missions. Armed helicopters or attack aircraft provide escort. They use low level and contour flight profiles during these missions. The Mi-8 is provided as an example.

Configuration of Mi-8s for chemical missions, for example, includes a 200- to 250-gallon dispensing system. Planning for helicopter chemical missions must include a minimum of 3 hours for disarming the aircraft and then installing the chemical dispenser. Figure 14-4 shows a typical helicopter profile for dispensing chemical agents.

Offense

When employed in the offense, the OPFOR uses chemical warfare early in an operation or from its onset. The OPFOR directs chemical attacks principally against enemy positions in the forward battle area. It begins the attack with artillery preparation of high-explosive mixed with non-persistent blood or nerve agents on front line enemy positions. The agent, however, will have dissipated when OPFOR troops arrive. Persistent agents protect the OPFOR flanks.

The basic OPFOR principle of chemical warfare is to achieve surprise. The OPFOR strikes across the front. At the same time it conducts simultaneous chemical strikes throughout the depth of enemy defenses. Aircraft deliver blister agents in the rear on enemy--

- Artillery.
- Logistics.
- Reserves.
- Command and control (C^2).

Chemical casualties inflicted and the necessity of chemical protective gear degrades enemy defensive actions.

Weapon System	Blood	Blister	Nerve
122-mm howitzer		X	X
130-mm gun			X
152-mm howitzer		X	X
122-mm rocket	X		X
140-mm rocket			X
220-mm rocket			X
300-mm rocket			X
FROG		X	
Aerial bomb 100 kg		X	
Aerial bomb 250 kg			X
Aerial spray		X	X

Figure 14-3. Chemical munitions and delivery systems.
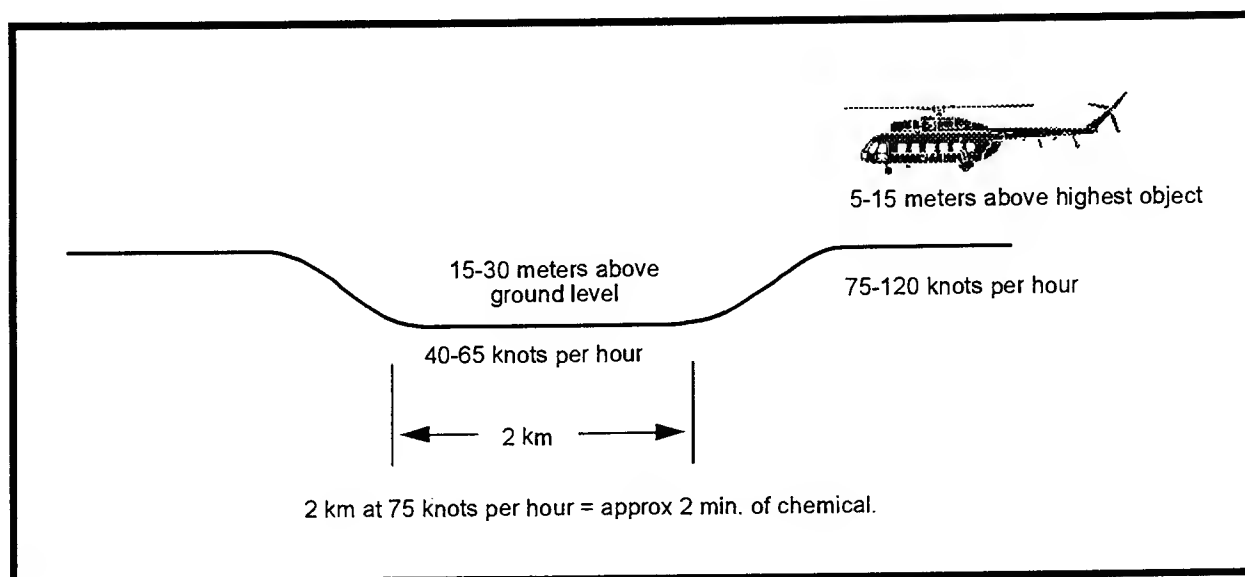
Figure 14-4. Typical helicopter profile for dispensing chemical agents.

Defense

In the defense, persistent agents deny the enemy use of certain terrain, canalize enemy forces, and break up attacks by massed infantry. They also impede the attacking forces C^2 and destroy the momentum of the attack by causing the enemy troops to adopt protective measures.

Targeting

The operational level determines targets of chemical fires/use. Normally they are:
- Neutralize airfields and port facilities.
- Neutralize the enemy in front of forward defenses.
- Neutralize enemy artillery and rocket systems.
- Deny avenues of approach and key terrain.
- Neutralize command and control centers.
- Target troops occupying defensive positions within the OPFOR main attack.

- Target troop concentrations, headquarters, and artillery positions.
- Neutralize bypassed pockets of resistance posing a threat to the flanks or rear of attacking forces.

Chemical Defense

The OPFOR understands that the best defense against weapons of mass destruction is the destruction of the enemy delivery systems. These enemy systems are priority targets. Other tactical responses to the threat are--
- Dispersion. Troop concentrations must last for as short a time as possible.
- Speed of advance. If the advance generates enough momentum, enemy targeting will be difficult and enemy systems kept on the move.
- Concealment. Camouflage and deception complicate enemy targeting.
- Continuous contact. Mixing friendly and enemy units together lessens the enemy's targeting ability.

The OPFOR views chemical defense forces as essential to continuing combat in an NBC environment. The need for special reconnaissance exists in addition to the all arms efforts in the area. The requirement for trained troops to handle chemical munitions also exists. The OPFOR realizes its forces cannot continue combat for any length of time in a contaminated environment.

Resources

The OPFOR has a small corps of chemical defense forces found at the national level, military region, district or division, and brigade. Most artillery, air defense, airborne, and special operations units at brigade and above have organic chemical defense elements, as well. Chemical defense battalions at the national level have two decontamination companies, and one chemical reconnaissance company. Military districts may receive one of these companies. Standing divisions have an organic chemical defense company, composed of two decontamination platoons and one chemical reconnaissance platoon. (See Figure 14-5.) Most separate and divisional brigades have a chemical defense platoon, composed of three chemical reconnaissance squads, three vehicle decontamination squads, and one personnel decontamination squad. (See Figure 14-6.) Light infantry brigades, not equipped with a chemical defense capability in peacetime, probably receive these assets during wartime.
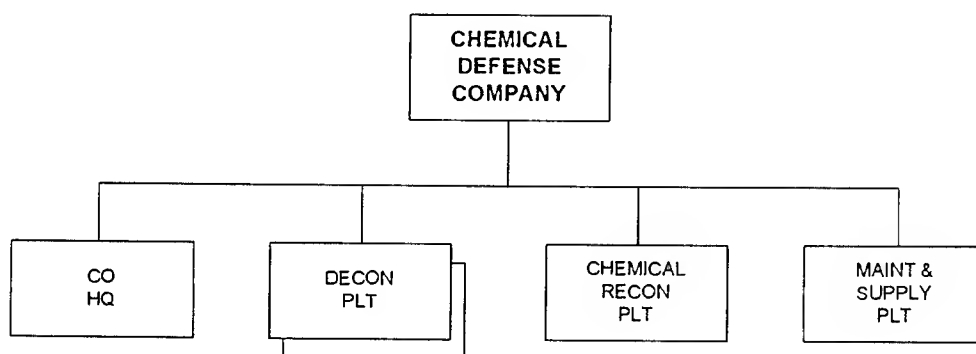
Figure 14-5. Chemical defense company.
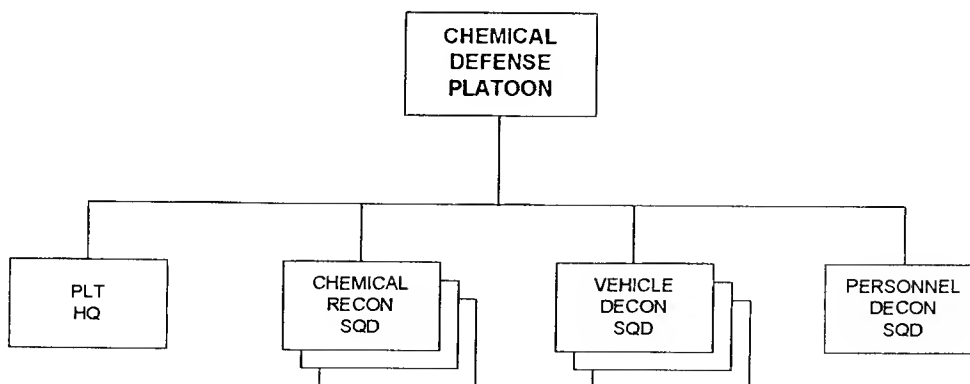
Figure 14-6. Chemical defense platoon.

The reconnaissance and decontamination elements of chemical defense units usually do not employ as whole units. Commanders divide their chemical defense assets and assign them to various maneuver units in a direct support role. No chemical defense units are subordinate to maneuver battalions or companies. Most tank, motorized infantry, and light infantry companies get a small NBC team that consists of NBC specialists. Company and battalion level NBC specialists are capable of checking unit NBC equipment and conducting NBC training. They also help decontaminate equipment and perform limited NBC reconnaissance when brigade NBC support is unavailable.

Missions

Chemical defense troops have two primary missions: **NBC reconnaissance** and **NBC decontamination**. Although the OPFOR is limited in the amount of NBC equipment it has available, basic NBC protection missions include--

- Reconnoitering known or likely areas of NBC contamination.
- Warning troops of the presence of NBC contamination.
- Monitoring changes in the degree of contamination of troops positions.
- Performing or monitoring the NBC decontamination of personnel, weapons, clothing, equipment, vehicles, troop positions, and sections of roads.

NBC reconnaissance. Chemical defense personnel assigned to reconnaissance elements of chemical defense units perform NBC reconnaissance. NBC reconnaissance involves two general types of activity: **patrolling** and **establishing observation posts**.

The OPFOR uses helicopters, when available, to perform NBC reconnaissance. Helicopters equipped with chemical and radiological area survey instruments are particularly useful for performing reconnaissance of areas with extremely high contamination levels.

Before an NBC patrol begins its mission, personnel check their individual NBC protection equipment and detection instruments. They also examine the NBC and communication equipment located on their reconnaissance vehicle. Prior to commencing the reconnaissance mission, patrol members put on their individual protective gear.

When operating in **chemical reconnaissance patrols**, personnel travel in reconnaissance vehicles specially equipped with NBC detection and warning devices. Chemical reconnaissance platoons can reconnoiter a large contaminated area or divides into squads and attached to combat units to perform reconnaissance of multiple routes. They reconnoiter or move with the forward tactical reconnaissance elements to detect and mark areas of contamination, enabling their forces to maintain the momentum of the attack. The OPFOR will avoid these contaminated areas when possible. When necessary they "button up" their combat vehicles and cross contaminated areas by the shortest route. NBC reconnaissance elements also collect and report weather data for planning smoke operations and possible chemical strikes.

When using one route, the route is divided into 1 to 2 km segments and reconnoitered by the patrols in leapfrog fashion. When performing NBC reconnaissance of multiple routes, one patrol covers each route. If NBC reconnaissance is being conducted in support of a march, the patrol moves well in front of the main body. The patrol may travel as part of a maneuver unit's security element or reconnaissance patrol, or can move along a separate route.

As a patrol performs its mission, a designated specialist observes the readings of the onboard NBC survey meters. Upon discovering radioactive or chemical contamination, the patrol determines size or boundaries of the contaminated area and the radiation level or type of toxic substance present. The patrol leader then plots contaminated areas on his map, reports to his commander, and orders his patrol to mark the contaminated area. The patrol designates bypass routes around contaminated areas or finds routes through the area with the lowest levels of contamination.

Although normally staffed with three to four chemical defense specialists, specialy trained combat troops can man NBC **observation posts**. The functions of NBC observation posts are:

- Detect NBC contamination.
- Determine radiation levels and types of toxic substances.
- Monitor the drift of radioactive clouds.
- Notify higher headquarters of NBC information, as well as meteorological data.
- Give the general alarm to threatened troops.

An NBC observation post locates near the command post of a combat unit. During movement, the NBC observation post moves in its own vehicle in close proximity to the combat unit commander.

NBC decontamination. The OPFOR tries to decontaminate personnel and equipment as soon after exposure as possible. They divide decontamination methods into two types, **partial** and **complete**.

The OPFOR forms chemical defense reserves at all levels, especially on main axes. The commander forms chemical defense reserves as early as possible to maintain the combat effectiveness of units. They decon-

taminates attacked units or those unable to bypass contaminated areas. Decontamination of routes is also possible, but only if alternate routes are not available.

Doctrine dictates that in the event of contamination, a combat unit conducts a **partial decontamination** with organic equipment. This decontamination occurs no later than one hour after exposure to contamination. This entails a halt while troops decontaminate themselves and their clothing, individual weapons, crew-served weapons, and combat vehicles. When forced to conduct partial decontamination of weapons and vehicles in the contaminated area, personnel remain in NBC protective gear. Following the completion of partial decontamination, the unit resumes its mission. This procedure suits the light infantry unit with limited decontamination ability. Other units use organic assets to supplement the decontamination.

Chemical defense troops perform **complete decontamination** of a maneuver unit. As with chemical reconnaissance elements, decontamination units of chemical defense companies and battalions can operate either as a whole or in smaller elements. Decontamination units deploy to contaminated combat unit locations. They set up near movement routes or establish centrally located decontamination points to serve several troop units.

Before deploying their equipment, the commander of a decontamination unit dispatches a reconnaissance group to--

- Select a favorable site.
- Mark off areas for setting up the various pieces of equipment.
- Establish and mark routes of entry and exit for the site.

Site selection should provide natural concealment, good approach routes, and sources of uncontaminated water. After decontamination stations are set up, the decontamination unit commander implements security measures against enemy observation or attack. This normally includes making use of natural concealment, employing camouflage, and digging trenches. If natural concealment is insufficient, an option is a smokescreen.

Basic **personal protective** measures begin with NBC protective equipment. This protective equipment, when used correctly, provides protection against NBC agents. NBC protective equipment enables combat troops to function on contaminated terrain, allowing the continuous conduct of combat operations. Troops don protective masks and suits the instant an NBC attack occurs. A significant characteristic of most NBC protective suits is the physical burden associated with prolonged wear, especially in warm temperatures. The suits are bulky and uncomfortable. When worn fully buttoned-up for an extended period of time in hot weather, soldiers quickly become fatigued. This lowers combat efficiency.

The OPFOR uses protection systems whenever available, such as shelters and combat vehicles equipped with filter and ventilation systems. When riding in NBC protected combat vehicles, personnel do not need to wear protective suits, masks, gloves, or boots. One drawback of collective protection systems is that personnel exiting a shelter or vehicle cannot return until they completely decontaminate or remove their protective clothing to avoid contaminating the shelter or vehicle. Another drawback of collective protective systems is that they apply mainly to mechanized infantry units. Motorized infantry and light infantry troops usually have few combat vehicles equipped with filter and ventilation systems.

Combat in an NBC Environment

The maneuver unit commander receives much of his initial information regarding the NBC situation in combat orders from a higher unit. He supplements this information with intelligence acquired by his own reconnaissance assets. Based on his estimate, the commander issues instructions to his subordinates. These instructions include:

- Missions for attached and organic NBC reconnaissance elements.
- Special measures to be taken while crossing contaminated terrain.
- Designating units responsible for assisting in the event of enemy NBC attack.
- Signals to use for warning of the enemy NBC attack.

March

The commander issues his march order before conducting a march. The march order designates:

- Units assigned to conduct NBC reconnaissance.
- Signals used to warn of NBC attack or contaminated areas.
- Recovery procedures following an NBC attack.

Offense

Before occupying an area prior to an attack, personnel and equipment disperse to ensure maximum protection against enemy use of NBC weapons. Commanders notify subordinates of NBC warning signals and the measures to be taken under NBC attack. They also develop contingency plans governing the restoration of control, reconstitution of combat units, and evacuation of personnel and equipment.

If a defending enemy force conducts a withdrawal, attacking units commence pursuit operations. Close contact during pursuit restricts a withdrawing enemy's use of NBC weapons, due to the proximity of his own troops. If the enemy commander uses chemical weapons, he endangers his own troops.

Defense

Before occupying defensive positions, chemical reconnaissance teams survey the area and mark any contaminated sectors. Company and battalion command posts and artillery firing positions have assigned chemical observers. To attain reliable NBC protection, chemical observation posts of two or three observers locate throughout a defensive position at a ratio of one post for each 2 to 3 km of defensive area. During bad weather, the OPFOR establishes more chemical observation posts or existing maneuver observation posts supplement the mission. Observers periodically switch on their NBC detection instruments and make reports as prescribed in the commander's combat order.

During an NBC attack, chemical reconnaissance teams/squads determine the type and intensity of contamination and mark contaminated sectors. They conduct partial decontamination and first aid, and reestablish the defensive structure.

Recovery Operations

Commanders at all levels must include provisions restoring units that fall victim to NBC strikes in their plans. This involves:
- Restoring command and control.
- Reconnoitering the target area.
- Conducting rescue work.
- Vehicle repair.

- Evacuation of wounded.
- Extinguishing fires.
- Decontaminating personnel and equipment.

Depending on the situation and availability of forces, recovery detachments are either formed from organic units or made available by higher headquarters. If formed from organic units, they normally come from the second echelon or reserve of a combat unit. Regardless of orgin, recovery detachments form and receive a general mission before they begin the restoration. They include chemical reconnaissance and decontamination assets, engineers, medical and vehicle repair personnel and infantry troops for labor and security. Chemical reconnaissance patrols normally reach the area of destruction first. Priority for decontamination and recovery help goes to personnel and equipment easily returned to combat.

The recovery detachment commander appoints selects locations for setting up a medical aid station, NBC contamination station, damaged-vehicle collection point, and an area for reconstituting units. He also designates routes for reinforcement and evacuation to and from the area. He then reports to his next higher commander on the situation and the measures taken. Meanwhile, engineers assigned to the damage control detachment clear rubble, extinguish fires, rescue personnel, and build temporary roads. The final step consists of forming new units and equipping them with weapons and combat vehicles. While the recovery detachment performs its mission unaffected, elements from a combat unit's second echelon or reserve provide security against any further enemy activity.

SMOKE

The OPFOR realizes smoke is a combat multiplier and plans to use smoke whenever possible. Most applications are during offensive operations. The OPFOR distinguishes between toxic and nontoxic smokes. This distinction drives OPFOR planning on when soldiers should mask. OPFOR planners intend to force the enemy to use his chemical protective systems, which will generally lower his combat effectiveness. The OPFOR has sufficient smoke assets to support combat actions; however, stockpiles of obscurants are normally low. The OPFOR may acquire or develop additional obscurant capabilities prior to hostilities.

The OPFOR combines a number of different agents to use as a single compound. For instance, chloride mixtures produce a particularly effective liquid agent. Liquid chloride agents primarily contain titanium, silicon, and tin tetrachlorides. Smokes, such as the S-4 compound (chlorosulfonic acid, sulfur trioxide, and sulfuric acid) may be seeded with particulates to block portions of the electromagnetic spectrum more fully. Mixtures of white phosphorus (WP) will probably combine with other obscurants, both synthetic and natural. WP or plasticized white phosphorus (PWP) are the standard artillery smoke rounds.

Resources

The only dedicated smoke units within the OPFOR inventory are national level smoke battalions. Each smoke battalion has three smoke companies; each equipped with nine smoke generators. (See Figure 14-7.) A smoke company, or smoke support, may be allocated to the division leading the main assault or defending in the enemy's main attack corridor. These allocations are for the duration of a specific mission.

Units below division level do not receive or control smoke units. The majority of operations, offensive and defensive, use organic assets to provide smoke support.
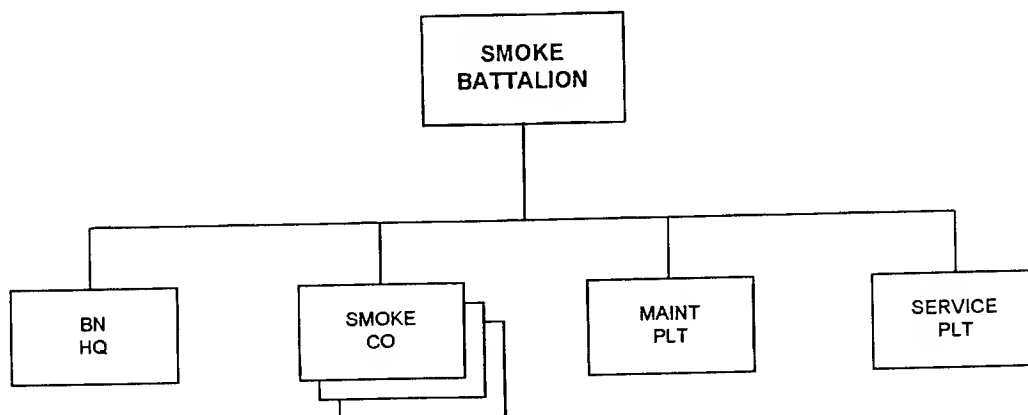
Figure 14-7. Smoke battalion, national level.

Types of Smoke

The OPFOR uses smoke in four ways: **camouflage smoke**, **blinding smoke**, **decoy smoke**, and **reconnaissance smoke**. Figure 14-8 outlines uses of various smoke systems, where smoke is placed, and the types of smokescreens.

Camouflage Smoke

Camouflage smoke covers maneuver. It conceals the location of units, type, and direction of their attack. It also degrades night-vision sights. It can also force attack helicopters to fly above or around a screen exposing themselves to attack. The OPFOR employs the camouflage smokescreen on, or to the front of friendly troops. These screens are employed up to the point where forces deploy to the battle formation. The number, size, and location of camouflage smokescreens vary de pending on terrain, weather, and the tactics conducted. As an example, a mechanized battalion requires smoke coverage for approximately 3 km. In this case, four camouflage smokescreens cover--

- The battalion's deployment to company columns.
- Movement toward the forward edge of the enemy defenses.
- The final deployment to battle formation.

The OPFOR establishes camouflage smokescreens by using a combination of--
- Smoke barrels.
- Smokepots.
- Combat vehicles with smoke-generating systems.
- Decontamination vehicles.
- Vehicles mounting smoke-generating devices.
- Aircraft.

System	Placement			Uses			
	On Friendly	In Between	On Enemy	Blinding	Camouflage	Decoy	Recon
Smoke Grenade	X	X		X	X	X	X
Smoke Generator	X	X			X	X	X
Smoke Pot	X	X			X	X	X
VEESS	X				X	X	X
Vehicle Dust	X				X	X	X
Helicopter	X	X	X		X		X
Mortar/Artillery Smoke		X	X	X	X		X
Rocket		X	X	X			X
Aerial Bomb		X	X	X			X
Aircraft Spray	X	X	X	X	X		X
Mortar/Artillery HE Dust		X	X	X			X

Figure 14-8. Smoke system characteristics.

The smoke generators of armored vehicles or TMS-65 decontamination vehicles establish a smokescreen very quickly. However they are easily detectable, therefore they are employed when cover is available or when located well behind friendly lines. Depending on the wind and weather, smoke-generating vehicles start at the center of the line to be smoked. They then travel in opposite directions along that line at approximately 15 kilometers per hour. Two vehicles are sufficient to lay a smokescreen long enough to cover a battalion advancing to the attack. Large smokescreens are divided into segments. Two vehicles provide smoke for each segment. Camouflage smokescreens should cover an area at least five times the width of the attacking unit's frontage.

The threat of enemy helicopter-mounted ATGM systems concerns the OPFOR. Consequently OPFOR doctrine dictates that advancing forces move as close behind the smokescreen as possible. The higher the smokescreen, the higher a helicopter must go to observe troop movement behind the smokescreen and the more vulnerable the helicopter is to ground-based air defense weapons. There is considerable observation-free maneuver space behind a 400-meter-high smokescreen for example. Conversely, smokepots provide a 5- to 10-meter-high screens against ground observation, but leave the force vulnerable to helicopters "hugging the deck" and "popping up" to shoot.

Blinding Smoke

The intent of blinding smokescreens is to blind enemy gunners (especially those of antitank systems), observation posts, and target acquisition systems, and to restrict the enemy's ability to engage the OPFOR effectively. A mixture of S-4 and WP and PWP produces a blinding smokescreen. The casualty effects and collateral damage produced by WP and PWP are significantly greater than those of other agents. Rocket launchers, artillery, mortars and aircraft deliver WP and PWP. S-4 is delivered by spray tanks mounted on aircraft.

The artillery preparation for an attack and fires in support of the attack include the use of blinding smoke rounds. Likely targets are enemy defensive positions, rear assembly areas, counterattacking forces, fire support locations, and subsequent objectives.

The screening properties of a blinding smokescreen create an environment in which fear and confusion add to the measured effectiveness of the smoke. This effect is amplified when coupled with the dust, HE combustion effects, and incendiary effects of phosphorus, on the battlefield.

Decoy Smoke

A unit not involved in the main attack may receive a smoke unit as a deception ploy. Decoy smoke draws the enemy's attention away from the point of main effort. The site and location of decoy screens depend upon the type of combat action, time available, terrain, and weather conditions. An example of the use of decoy screens is a river crossing in which several possible crossing sites receive screening simultaneously. If the enemy fires into the decoy screen, black smoke and fire devices ignite, simulating burning vehicles or equipment.

Reconnaissance Smoke

The OPFOR employs blinding or camouflage smoke prior to an attack. This causes the enemy to fire into it thereby pinpointing the enemy systems. The OPFOR then adjusts its fire plan for the true attack.

Delivery Systems

The OPFOR has ample equipment for the use of smoke. Its munitions and equipment include--

- Artillery, mortar, and rocket smoke rounds.
- Aircraft. Aircraft-mounted smoke generating equipment is in the inventory for both fixed- and rotary-wing platforms.
- Smoke barrels, drums, and pots. These are the primary source of smoke to support combat. When smoke units are unavailable, organic engineers set out smoke pots or barrels.
- Specialized vehicles. Although not designed for this purpose, some decontamination vehicles within chemical defense units generate smoke.
- Vehicle engine exhaust smoke system (VEESS). OPFOR tanks and infantry fighting vehicles generate smoke through their exhaust systems. In addition to providing smokescreens, the VEESS in conjunction with smoke grenades can:
  - ◊ Conceal a crew exit from the vehicle.
  - ◊ Simulate a burning vehicle.
  - ◊ Cover maneuver to another position.
- Smoke grenades.
- Large area smoke generators (ground and air).
- Spray tanks (ground and air).

Artillery

WP rounds, that have a moderate degrading effect on thermal imagers and a major one on lasers, are available to OPFOR artillery. Smoke-filled artillery projectiles are also common. Seven to 10 percent of all artillery fire is smoke rounds. When artillery located in a smoke-covered position fires at targets outside the smoke, the artillery is 10 times less effective. When the smoke conceals only the targets, effectiveness decreases four to five times. Munition expenditures for producing a 1 km smokescreen for 15 minutes are in Figure 14-9.

Wind Direction						
	Head or Tail		Oblique (45%)		Flank	
Weapon	Number of Tubes	Number of Rounds	Number of Tubes	Number of Rounds	Number of Tubes	Number of Rounds
82-mm mortar	12	900	8 to 12	750	8	600
120-mm mortar	8	450	8	350	4	250
122-mm howitzer	8	300	8	220	4	150
152-mm howitzer	13 to 14	200	10	150	6 to 7	100

NOTES:
1. Assuming the wind speed is 3 to 5 meters per second.
2. If the wind speed is 6 to 7 meters per second, multiply the ammunition consumption by 1.5.
3. An artillery battery of 6 to 8 pieces, regardless of the caliber of its weapon, can produce a smokescreen of:
   * Over a 500 to 700 meter frontage with a crosswind
   * Over a 150 to 200 meter frontage with head or tail wind
   If a frontage exceeds these dimensions, divide it among the batteries.
4. When there is a layer of snow over 20 centimeters in deep, multiply the ammunition consumption by a factor of 1.5 to 2.

Figure 14-9. Munition expenditure norms for producing 1 km smokescreen for 15 minutes.
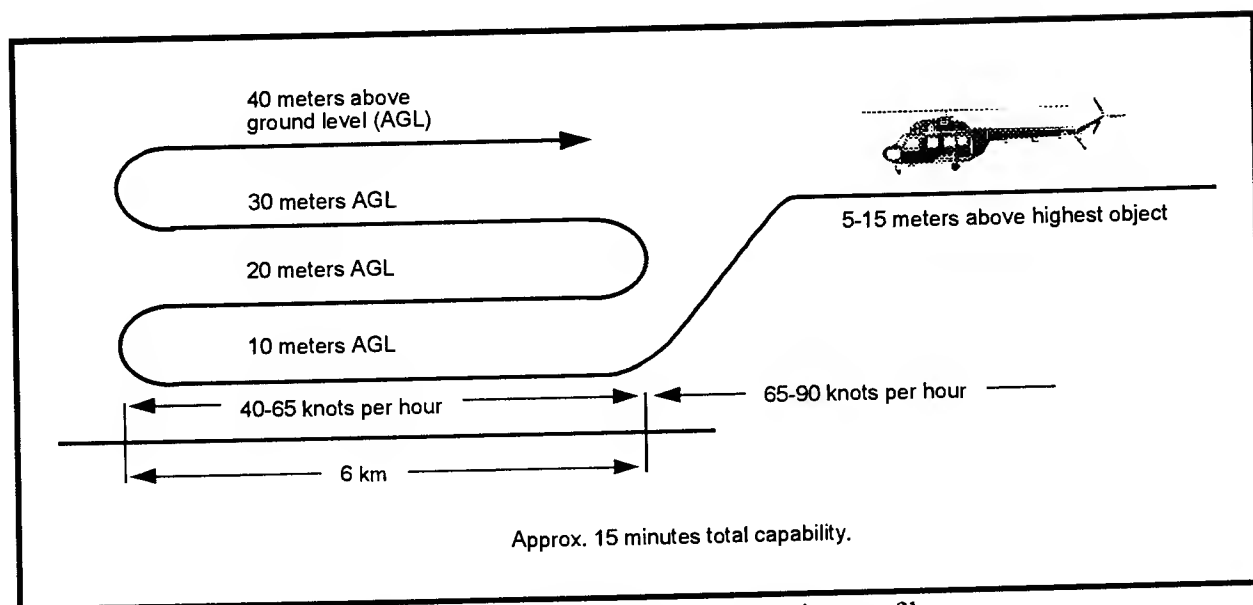
Figure 14-10. Helicopter smoke laying profile.

Aircraft

The OPFOR employs smoke bombs or pots dropped by either fixed-or rotary-wing aircraft. Some aircraft have spray attachments.

The Mi-2 has the capability to provide air delivery of smoke for a maneuver brigade. During smoke missions the pilot operates the aircraft and smoke generating equipment. Weight limitations do not allow for additional personnel or arming. Planners need to allow 6 hours of aircraft preparation for smoke missions.

Obscuration and screening smoke may be delivered by the Mi-2. Figure 14-10 shows a typical helicopter smoke laying profile. This profile is representative of obscuration smoke of a six kilometer enemy front.

Armored Fighting Vehicles

All tanks and IFVs can generate smoke with their VEESS. A platoon can produce a screen that can cover a battalion frontage for four to six minutes. The combat vehicle forward firing smoke grenade launchers can produce a screen from 250 to 300 meters ahead of the vehicle.

Smoke Pots

Smoke pots are the primary source of smokescreens. The OPFOR has smoke pots, barrels, and drums in its equipment inventory, and makes considerable use of this capability. To estimate the number of pots required to maintain a smokescreen for a particular battle, the OPFOR uses the following formula:

$$N= \frac{AT}{LWD}$$

Where:
N = number of smokepots required
A = area of smokescreen (square kilometers)
T = time to maintain smokescreen (minutes)
L = length of impenetrable smokescreen from one pot (meters)
W = width of smoke cloud at end of screen from one pot (meters)
D = duration of smoke from one pot (minutes)

Increase **N** 10 to 15 percent for safety. Available light and meteorological conditions affect the amount required. The required number may be reduced by 30 to 40 percent at night and increased by up to 50 percent if the wind is gusty or has a velocity greater than 5 meters per second.

Employment Guidelines

The OPFOR uses the following guidelines for employing smoke:

- Place smoke on enemy firing positions and observation points before and during an attack. The primary means of dissemination are artillery, mortars, and aircraft.
- Create screening smoke throughout the tactical depth of the enemy's defense and to screen the flanks of attacking units.
- Place screening smoke of 2 to 3 hours' duration along a wide front to cover attacking units conducting river-crossings. Whenever possible, place screens placed on both sides of the river. Floating pots and barrels may also be placed in the river. Use decoy screens at likely crossing sites to deceive the enemy.
- Whenever possible the commander screens important locations and possible targets such as--
  ◊ Troop concentrations.
  ◊ Crossing sites.
  ◊ Bridges.
  ◊ Railroad junctions and unloading areas.
- Screen avenues of approach, with particular attention given to eliminating reference points that could aid enemy aviation targeting.
- Establish reliable communications and continuous coordination between units

using smoke and forward air warning and air defense posts.
- Cover maneuver forces with smoke-screens set down on a broad frontage.
- Conceal the direction and time of attack with camouflage, blinding, and decoy smokescreens.
- Use smoke to mark targets for friendly aircraft and for signaling purposes.
- Use smoke to screen logistics routes and activities such as the repair and evacuation of casualties, etc., that are within range of enemy fire and observation.
- Cover the movements of guns into firing positions and moves from position to position with smoke.
- Screen the activities of engineer units when clearing minefields, barriers, and marking passages.

Meteorological Influences

Local meteorological conditions greatly affect the employment of smoke. The C^2 of troops maneuvering in smoke is extremely difficult. This is true even when commanders thoroughly plan the use of smoke, conduct reconnaissance and prepare their troops. Ignoring weather conditions can cause the unexpected covering of friendly forces by smoke. This can lead to disorientation, loss of C^2, and tactical disaster. Careful analysis of weather conditions in the planning process is important. The conditions that most effect the employment of smoke are wind and lower atmospheric stability in conjunction with temperature, relative humidity, and precipitation. Further information on wind effects and munition expenditure norms for producing a 120- to 200-meter smokescreen for 15 minutes is in Figure 14-11.

Weapon	Head Winds		Flanking Winds (meters per second)			
	up to 5	over 5	up to 2	3 to 5	6 to 7	over 7
	Required Rounds		Required Rounds			
82-mm mortar	108-180	162-270	N/A	72-120	108-180	144-220
120-mm mortar	54-90	81-135	N/A	36-60	54-90	72-120
122-mm howitzer	36-60	54-90	N/A	18-30	27-45	36-60

Figure 14-11. Munition expenditure norms for producing
a 120- to 200-meter smokescreen for 15 minutes.

Wind direction is specified according to its relation to the forward edge and is classified as head, tail, oblique, or flank. A wind that blows at an angle of 60 degrees to 90 degrees to the forward edge is either a **head** or **tail** wind, depending on whether it is blowing from one's forward edge to that of the enemy (tail) or vice versa (head). An **oblique** wind blows across the forward edge at an angle of 30 degrees to 60 degrees. A **flank** wind blows parallel to, or not more than 30 degrees from, the forward edge. A tail wind is highly favorable when forces are attempting to establish a blinding smokescreen.

Wind speed data help to predict the drift rate and life span of a smokescreen and the quantity of smoke agent required. Favorable, moderate, or unfavorable are the classifications of wind speed, as shown in Figure 14-12.

Under **favorable** conditions, the smoke cloud disrupts very little, its life span is optimum, and the quantity of smoke agent required is minimal. **Moderate** conditions require a relatively large quantity of smoke agent; however, the life span of the cloud still permits tactical use. A high density of smoke may be achieved under moderate wind speeds. If the wind direction changes frequently, there is a danger of ineffective dispersal. With **unfavorable** wind speeds, the smoke cloud disperses too rapidly or not at all.

The three conditions of atmospheric stability are: stable, neutral, and unstable. **Stable** conditions exist when the lower layers of the air are cooler than the upper layers. This usually occurs at night and in the early morning when there is a cloudless sky. During this time, intermixing of air in the atmosphere is very limited, and the smoke tends to drift along the earth's surface. **Neutral** conditions exist when the air temperature is the same at the earth's surface as it is at the upper layers.

Wind Speed	Condition
0 - 1.5 meters per second	Unfavorable
1-5 - 3.0 meters per second	Moderate
3.0 - 5.0 meters per second	Favorable
5.0 - 8.0 meters per second	Moderate
Greater than 8.0 meters per second	Unfavorable

Figure 14-12. Wind effects on smoke operations.

This usually occurs when there is cloud formation and the wind speed exceeds 2 to 3 meters per second. This condition favors the employment of smoke. In **unstable** conditions, the lower layers are warmer than the upper layers, thus causing an intensive intermixing of the air by vertical air movements. These conditions normally occur on cloudless days and/or when wind speeds exceed 12 to 14 meters per second. Under these conditions, a smoke cloud quickly disperses.

Heavy rain is unfavorable for smoke. Falling raindrops wash the smoke out of the air and lead to the accelerated dispersion of a smoke cloud. Favorable meteorological conditions for employing smoke occur when a wind is stable in direction with a speed of three to five meters per second and a stable or neutral atmospheric condition exists. Average conditions for using smoke include a wind speed of 1.5 to 3 meters per second or 5 to 8 meters per second with neutral atmospheric conditions. Unfavorable conditions consist of wind speeds of less than 1.5 meters per second or greater than 8 meters per second, gusty winds, winds that are unstable in direction, strong unstable atmospheric conditions, and heavy rain.

Chapter 15
Camouflage, Concealment,
and Deception

The OPFOR classifies camouflage, concealment, and deception (CCD) as an art, requiring imagination and resourcefulness. It developed a doctrine that incorporates a multitude of measures designed to support military actions. The OPFOR believes that successful use of CCD creates surprise, reduces losses of personnel and equipment, and improves the prospects for successful battle. For these reasons, CCD is an integral part of virtually every OPFOR military operational and tactical plan. The OPFOR encourages commanders to be innovative, enthusiastic, and resourceful in applying CCD doctrinal concepts.

CAMOUFLAGE AND CONCEALMENT

Camouflage and concealment essentially consist of measures employed to conceal, reduce, alter, distort, or obliterate the characteristic outlines and features of military personnel, equipment, and installations. The OPFOR bases its principles of camouflage and concealment on a knowledge of signs and indicators commonly associated with military activity and equipment. These signs and indicators include movement and traces of movement, shape, size, position, color, noise, fire, smoke, dust, light, and shadow. Camouflage and concealment are the most frequently employed of the many deceptive measures used by the OPFOR.

The OPFOR is well aware that many of its potential adversaries possess sophisticated reconnaissance assets. It believes, however, that its application of CCD doctrine can reduce or limit the effectiveness of enemy reconnaissance. Figure 15-1 illustrates examples of the effects of some CCD measures on typical optics, trackers, imagers, and guidance systems that use the spectral band.

Terrain, Weather, and Darkness

Terrain features, adverse weather conditions, and darkness offer excellent camouflaging and concealing properties. The OPFOR can often exploit these with minimum time and resources.

Terrain

Broken and restricted terrain, with plentiful vegetation and/or manmade structures is the most ideal for concealment. Such terrain offers plenty of natural and artificial screens that protect against visual, radar, and thermal observation. Forests provide the best natural screens, particularly when they have an unbroken canopy. Evergreen forests consistently offer the most protection, since they retain their foliage throughout the year. The OPFOR makes extensive use of the following:

- Groves and orchards.
- Brush, shrubbery, and tall grass.
- Gardens, haystacks, and debris.
- Ditches, ravines, and snowdrifts.
- Caves and tunnels.
- Reverse slopes, embankments, and shadows.
- Fences, buildings, and other manmade structures.

CCD METHODS AND EFFECTIVE SPECTRAL REGION OF OPERATION

	VISIBLE 0.4 to 0.7 µm	SWIR 0.7 to 2.0 µm	MWIR 3.0 to 5.0 µm	LWIR 8.0 to 12.0 µm	MMW 35 GHz to 95 GHz
SIGNATURE ALTERATION	FOLIAGE CAMOUFLAGE PAINT CAMOUFLAGE NETS		REDIRECT ENGINE EXHAUST HOT SPOT MASKING		
DECOYS/ DECEPTION	MOCKUP REPLICAS SMOKE		HEATED PLATES/CORNER REFLECTORS FLARES		CHAFF
OBSCURANTS	FOG OIL, SMOKE PHOSPHORUS SMOKE/DUST/BURNING OIL		ADVANCED SMOKE		CHAFF

VISIBLE	SWIR	MWIR	LWIR	MMW
EYE TV CAMERA •BINOCULARS •PERISCOPES/ TELESCOPES •DAY SIGHTS FOR WIRE-GUIDED MISSILES • DIRECT-VIEW OPTIC	**LASER TRACKERS** •ACTIVE IR SEARCH-LIGHT, IR PERISCOPES •TRACKER BEACONS FOR WIRE-GUIDED MISSILES •LASER DESIGNATORS •GOGGLES •IMAGE CONVERTERS	**HEAT SEEKING MISSILES** •IR-GUIDED SMART WEAPONS •THERMAL IMAGERS	**COMMON MODULE FLIR** •THERMAL IMAGERS •NIGHT SIGHTS FOR WIRE-GUIDED MISSILES •CO_2 LRF	**ALL-WEATHER SENSORS** •MMW-GUIDED SMART WEAPONS

Figure 15-1. CCD methods and effective spectral region of operation.

Individual soldiers and crew members use local, natural vegetation and readily available material to construct screens to conceal personnel, equipment, and positions. These can be very effective if matched with the color and pattern of surrounding terrain.

The OPFOR makes every effort to limit engineer construction to that which is necessary. It believes that it can conceal units in suitable terrain. It uses trees, other natural screens, or nets to conceal equipment and minor construction such as digging of individual fighting positions and a few trenches. Select ing sites that take advantage of the natural camouflaging and concealing properties of terrain avoids unnecessary disruption of the natural appearance of terrain, especially the removal of vegetation. The OPFOR camouflages foxholes, personnel and communications trenches, vehicle revetments, and other excavations and fortifications with nets, and locally available material. It also locates them in tree lines and along curvatures and uneven areas of terrain. It uses horizontal camouflage nets or screens to conceal them from aerial observation, and vertical screens to protect them against ground observation.

Weather and Darkness

Periods of rain, snow, fog, dense low cloud cover, and darkness can facilitate the accomplishment of combat tasks because of the effects these conditions have on observation, reconnaissance, and some targeting devices. (See Figure 15-2.) Whenever possible, OPFOR preparation, camouflaging, and occupation of field positions occurs at night or under conditions of limited visibility. Attacking forces move to assembly areas and assault positions under cover of darkness and deploy for attack at dawn, or before. The OPFOR believes that darkness and adverse weather conditions favor long marches, withdrawals, regroupings, concentrations, engineer construction, and the achievement of surprise.

Smokescreens

The OPFOR believes that its extensive use of smoke effectively increases the tempo of an offensive, conceals troops and equipment, achieves surprise, and reduces losses. It uses smoke on the modern battlefield to blind, conceal, and deceive, to degrade the effectiveness of antitank guided missiles and laser-guided munitions, and to interfere with infrared, television, night-vision, and radar equipment.

Commanders often use smoke to accomplish their combat missions. They use smoke during most field training to provide experience in the value, limitations and tactical uses of smokescreens. The OPFOR uses a wide variety of smoke-producing devices, such as--

- Hand and rifle grenades.
- Smoke pots, drums, and generators.
- Smoke mines, aerial bombs, mortar, and artillery rounds.

Fixed and rotary-wing aircraft, motor vehicles, APCs, IFVs, and tanks also dispense smoke. The OPFOR places special emphasis on producing smoke with combat vehicles. Because of their mobility, they can dispense thick smoke over large areas in a short amount of time. For more detail, see Chapter 14, Chemical and Smoke Support.

Blinding Smoke

The OPFOR places blinding smoke on enemy positions to interfere with observation and reduce the effectiveness of aimed fire. Mortar, artillery, or multiple rocket launcher projectiles and aerial bombs are the most common delivery means.

Camouflage Smoke

When used in areas occupied by the OPFOR, between it and the enemy forces, or on the flanks, camouflage smoke can conceal the OPFOR's location, movement, and intentions from ground and aerial observation. Most types of dispensing devices are appropriate if meteorological conditions are favorable. A typical OPFOR smokescreen covers greater than five times the area of the object(s) being concealed to hinder an accurate estimation of the location of targets in the smokescreen. Optimally, the smokescreen should not only conceal the troops and equipment, but also any terrain features that can be reference points for enemy fire. The OPFOR tries to minimize the adverse effect of the smoke on its activities by--

- Carefully selecting sites for the smoke devices.
- Strictly controlling the timing of the use of smoke.
- Monitoring meteorological conditions, particularly the speed and direction of the wind and the vertical stability of the air.

WEATHER PARAMETERS	VISIBLE AND NEAR IR	SHORTWAVE IR	MIDWAVE IR	LONG WAVE IR	MMW
LOW VISIBILITY	SEVERE	MODERATE	LOW	LOW	NONE
RAIN/SNOW	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE/LOW
HIGH HUMIDITY	LOW	LOW	MODERATE	MODERATE	LOW/NONE
FOG/CLOUDS	SEVERE	SEVERE	MODERATE/SEVERE	MODERATE/SEVERE	MODERATE/LOW
PHOSPHORUS/DUST	SEVERE	SEVERE/MODERATE	MODERATE	MODERATE	LOW/NONE
FOG OIL, SMOKE	SEVERE	MODERATE	LOW	LOW	NONE

	VISIBLE	SWIR	MWIR	LWIR	MMW
	EYE TV CAMERA •BINOCULARS •PERISCOPES/ TELESCOPES •DAY SIGHTS FOR WIRE-GUIDED MISSILES • DIRECT-VIEW OPTIC	LASER TRACKERS •ACTIVE IR SEARCH-LIGHT/IR PERISCOPES •TRACKER BEACONS FOR WIRE-GUIDED MISSILES •LASER DESIGNATORS •GOGGLES •IMAGE CONVERTERS	HEAT SEEKING MISSILES •IR-GUIDED SMART WEAPONS •THERMAL IMAGERS	COMMON MODULE FLIR •THERMAL IMAGERS •NIGHT SIGHTS FOR WIRE-GUIDED MISSILES •CO_2 LRF	ALL-WEATHER SENSORS •MMW-GUIDED SMART WEAPONS

TV CAMERAS

IMAGE INTENSIFIERS
•STARLIGHT SCOPES
•GOGGLES

Figure 15-2. Weather effects on the spectral band.

Decoy Smoke

Using decoy smoke in areas not occupied by the OPFOR may deceive the enemy regarding actual location, movement, and intentions of friendly forces. The OPFOR often uses it with camouflage smoke screens during deployments and river crossings.

Camouflage Covers, Nets, and Screens

Covers may be solid or mesh construction (nets), with natural or artificial material such as pieces of cloth, branches, grass, and straw being attached. Using, for example, wire, cloth, tree limbs, logs, sod, vegetation, and snow, the OPFOR may also construct field

expedients. It uses trees, other natural screens, or nets. Camouflage covers or nets conceal vehicles, tanks, mortars, artillery, and other equipment from observation. OPFOR camouflage covers normally touch the ground on all sides and may be flat, concave, or convex.

The OPFOR uses flat covers to conceal objects that do not rise above the ground; concave covers to conceal equipment or troops in ravines or depressions; and convex covers for those above ground. Horizontal camouflage covers conceal objects from aerial observation. They are--

- Parallel to the ground and open on the sides.
- High enough to allow maintenance and rapid entry and egress.

Horizontal camouflage nets normally conceal transport and combat vehicles, prime movers, portions of trenches, and ammunition and gasoline storage.

Vertical camouflage nets, screens, and fences conceal the following from ground observation:

- Weapons and firing positions.
- Observation posts and portions of trenches.
- Engineer works and short sections of road.

Light Masking

Regulations require the practice of good light discipline. Blackout measures, such as the use of curtains, shutters, and other light-proof barriers, conceal interior lights; windows, hatches, and entrances through which light may escape. It prohibits smoking, the use of matches, lighters, campfires, and electric lights except in specific areas where concealment is feasible. The OPFOR equips many of its vehicles with blackout devices for headlights, tail lights, and interior lights to reduce

their light signatures. The OPFOR often trains at night and soldiers know that--

- Campfires are visible at a distance of 6 to 8 kilometers (km).
- The glow from a lit cigarette is visible from 500 to 800 meters away.
- A lighter is visible up to 1.5 km away.
- A flashlight is visible up to a 2 km distance.
- Small arms muzzle flashes are visible out to 1 to 2 km.
- Vehicle headlights are visible at a range of 4 to 8 km or more.

Sound Masking

The OPFOR teaches its soldiers that sound carries more easily under certain conditions. These conditions are--

- In open, level terrain.
- When the wind is blowing toward the enemy.
- In calm, clear weather.
- In early morning.
- Over water.
- Especially at night.

The OPFOR teaches that at night, in open areas--

- Sounds of troops moving on a road are audible at 300 to 600 meters.
- Truck movement is audible at 0.5 to 1 km; and tank movement at 1.2 to 4 km.
- A shot is audible at 2 to 3 km.
- The conversation of a few men can carry up to 300 meters.

Additional information on combat at night is located in Chapter 21.

The OPFOR prefers to perform most combat actions during rain, snow, thunderstorms, and gusting winds, because it is more difficult to distinguish sounds that indicate military activity. The OPFOR always looks for means to reduce or muffle sound.

Camouflage Paint

The OPFOR considers paint an effective method of camouflaging combat and tactical vehicles, artillery, and aircraft. The color of paint should always match the background of the terrain. It uses both single and multicolored paints. It uses a single color when in terrain of predominantly one tone such as snow, sand, or grassland. It applies multicolored paints in terrain with varying backgrounds. The OPFOR uses different sets of paint between summer and winter. White, earth-brown, and dark-green are for winter. Sand, off-red, earth-brown, dark-green, light-green, and black are for summer. Depending on the time of year and terrain, up to 50 percent can be one color, broken up by two to three other colors.

DECEPTION

Deception is any means applied to mislead and limit the enemy's ability to observe, recognize, and identify the location, movement, size, equipment, and composition of forces and their objectives and intentions. Even though the concepts and methods used by the OPFOR are the same used by U.S. forces, the OPFOR puts greater emphasis on their use and situational application. Although camouflage and concealment are the primary methods used to support deception in military activities, they are but two of the many measures used by the OPFOR. These measures include--

- The use of dummy and decoy equipment; demonstration and diversionary actions.
- Interfering with the enemy's reconnaissance and intelligence collection abilities.
- Sound communications security and electronic emissions control.

- Dispersion and frequent movement of troops, units, equipment, and command posts.
- Disinformation and sound broadcasting.

To be successful, the OPFOR believes deception cannot follow established patterns, and tailors its deception plan for each situation, varying in time, place, and nature.

An example would be the OPFOR concern for concealing the march of a major formation from modern intelligence-gathering means. The threat of deep interdiction by long-range, high-precision conventional weapons, or even from conventional air power, increase the need for CCD. Measures used to cover marches include the following:

- Strict secrecy regarding march routes, assembly and rest areas for road marches. (Even brigade commanders receive no more information than the next day's missions and objectives.)
- Secrecy regarding loading and unloading areas for rail marches.
- Tight radio and radar emission control.
- Avoidance of population centers where possible.
- Marching during inclement weather or at night when possible.
- Extensive use of smoke.
- Attention to camouflage and concealment in rest and assembly areas.
- Use of disinformation and false radio nets.

It may not be possible to conceal the conduct of a march, but concealing the size of a force and the portrayal of march columns on false routes may be. For instance, the OPFOR often uses corner reflectors and other devices to confuse enemy radars as to which are real march routes, and perhaps to conceal the direction of the march. Going against norms known to enemy intelligence

collectors and analysts may also help to confuse and deceive. Such norms could include speeds of movement, column intervals, or locations of rest areas.

Dummy and Decoy Equipment

The OPFOR places great value on using dummy and decoy equipment in simulating activity where there is none to divert the enemy's attention from actual activity. It makes dummy and decoy models to represent almost any object, but those most likely seen on the battlefield are--

- Tanks, IFVs, and command vehicles.
- Artillery, mortars, and missiles.
- Aircraft and small arms.

Troops make stationary equipment for immediate use in the field using whatever material is readily available. Some OPFOR organizations may have more sophisticated collapsible models available.

In order for dummy and decoy equipment to be successful, the OPFOR believes that--

- The employment of such equipment must be at a location and in a manner the enemy would expect it.
- Dimensions and appearance must closely correspond to the actual equipment.
- Camouflage should hide any defects, but not prevent detection.
- Placing dummy and decoy equipment in certain areas requires some troops and working vehicles to perform activity for realism.

Dummy Positions and Facilities

As part of its deception, the OPFOR makes extensive use of dummy positions and facilities when practical and as the situation dictates. Those most likely to be seen are dummy trenches, individual fighting positions, combat vehicle fighting positions, pontoon bridges, temporary storage sites, temporary airfields, and truck parks. When directed as part of an operational-level deception, divisions and below may expend the resources necessary to portray dummy fixed facilities, such as--

- Bridges and airfields.
- Railheads, railroad tracks, and roads.
- Storage and production facilities.

Demonstration and Diversionary Actions

The OPFOR often uses demonstration and diversionary actions, together with other measures, to conceal the main thrust of its attack. It occasionally attempts to create an impression of inactivity or activity not characteristic of an impending attack. For example, it often simulates troop withdrawals, construction or upgrading of defensive positions, or the laying of minefields.

In sectors where it does not plan the main attack, the OPFOR would want to give the impression that preparations for an attack are underway. Actions could include--

- Increased reconnaissance.
- Simulated troop reinforcement.
- Creation of false radio nets.
- Increased radio traffic.
- Mineclearing activities.
- Breaching obstacles.
- Registration of artillery fire.
- Dummy vehicle columns.
- Repair or construction of roads and bridges.
- Broadcasting of engine and track noise.
- Simulated delivery of ammunition, supplies, and equipment.

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Combat in urban areas includes all military actions planned and conducted on a terrain complex where manmade construction impacts on the tactical options available to the OPFOR commander. The OPFOR considers military activities in urban areas to be only those missions conducted in populated cities, towns, and villages. This chapter does not address combat in communities smaller than villages (for example, isolated hamlets, groups of buildings along roads in agricultural or open areas).

Although motorized infantry units can conduct combat in urban areas, the OPFOR prefers to task-organize mechanized infantry battalions to serve as the baseline assault organization. Normally combat support units reinforcing the **assault battalions** must come from higher. This is especially true if the baseline is a motorized infantry battalion. This chapter assumes the assault battalion (motorized or mechanized) has received all reinforcements it normally would have when attacking a fortified town.

EFFECTS

Fighting in built-up areas differs in several important respects from field combat. First, the fighting quickly becomes a series of small-scale battles at squad to company level, which often means that there is little central control. Second, the restricted space reduces the unit's ability to maneuver and limits observation and fields of fire. Third, the destruction and obstacles in urban areas make it very difficult to maintain rapid rates of advance. Fourth, effective reconnaissance of an urban area is often difficult to achieve, thus necessi-

tating reconnaissance by fire. When the OPFOR fights in urban areas within the State, it receives aid from sympathizers. Within the boundaries of the State, the militia plays a major role in the OPFOR defense.

Personnel

Urban terrain does not directly affect personnel the way other special conditions do. The greatest effect is the proximity of the enemy, and the short range at which the enemy can appear or disappear. This situation may produce a psychological effect or fear not equaled in any other type of combat, but this fear will decrease as the OPFOR soldiers gain experience in town fighting.

Equipment

The greatest effect of urban combat is the **reduced range** of weapons. Combat in towns is close-range. Seldom does an opportunity arise to engage the enemy at long distances. Buildings and rubble may hinder movement of vehicles, but structures and debris provide good weapon emplacements.

The OPFOR recognizes that fighting in built-up areas leads to a sharp increase in **logistics** burdens and tries to meet this problem in timely fashion. There are particularly heavy demands for HE, smoke, small arms ammunition, explosives, and mines. Assault personnel receive increased quantities of certain weapons especially grenades, including antitank, smoke, and incendiary grenades. **Specialized equipment**, such as grapples, ropes, and ladders, is provided or acquired locally. Smoke is used extensively to cover the assault.

Large numbers of extra manpack radios are necessary, because vehicle sets are of limited use and because of the increased numbers of patrols and observation posts required in fighting in built-up areas. Maximum use is made of all non-radio communications means.

Characteristics

Combat in cities, towns, and villages has a number of unique characteristics:

- A **surprise attack** from the march, based on detailed reconnaissance, is the preferred form of attack.
- Day and night attacks maintain **constant pressure** on the defender.
- Rapid exploitation of initial success by the immediate follow-up of preparation fires, and the use of heavy weapons in the direct fire role by task organized assault groups within the confines of the built-up area.
- If initial attacks fail to make progress, the OPFOR launches attacks from positions in direct contact.
- A series of small battles along streets, building-to-building, and room-to-room.
- Smoke, darkness, and **limited visibility** conditions conceal movement.
- Limited observation and fire.
- Difficult maneuvering of forces and means.
- Constant **close contact** with the enemy.
- Generation of rubble, fire, and explosions.

Decentralization of control, emphasizing small-unit actions. Control by higher headquarters is difficult because of problems of observation and communication. As a result, responsibility is delegated downward along with combat support resources. Considerable responsibility is placed on the shoulders of assault detachment commanders (discussed later). They can, for instance, often commit their second echelon or organize enveloping detachments without seeking the approval of their next level commander. At all levels of command, planning and orders have to be more detailed than in open country.

OFFENSE

The OPFOR knows that fighting in villages and towns slows its rate of advance, requiring a high consumption of manpower and materiel. Therefore, it tries to avoid fighting in built-up areas whenever possible, either by bypassing defended localities or by seizing towns from the march before defenses can be prepared. Undefended towns may be exploited as avenues of approach or assembly areas.

The decision to attack a town or village may be political, strategic, or tactical. District or division is the lowest level of command at which this decision is made. Tactical reasons for the attack may include any of the following:

- The objectives on key terrain.
- Areas encompassing vital crossings of water or other obstacles.
- The necessity to protect an exposed flank.
- A requirement to stage a diversion.
- A need to tie down enemy troops and reserves.
- The unavoidability of a built-up area due to the extent of urbanization.

In meeting battles, leading echelons cut off and destroy enemy forces before they can occupy built-up areas. Should this be impossible, the OPFOR bypasses pockets of resistance with first-echelon units and continues the advance. The attacking unit bypasses and isolates enemy-held areas.

The second echelon neutralizes the bypassed enemy. This concept has the following factors in its favor:

- It reduces the amount of street fighting, which involves a great expenditure of time, men, and equipment.
- It maintains the momentum of the attack.
- It takes maximum advantage of long-range weapons.
- It ties up the enemy in areas already congested by a civilian population thereby restricting his use of weapons of mass destruction.
- Integrate, at reinforced company level, tank, motorized infantry, and combat engineer assault groups with the direct support of antitank weapons, and the direct and indirect support of artillery and mortars.

Organization

Due to the manpower intensive, close-combat nature of urban combat, mechanized or motorized infantry brigades are more appropriate than tank or light infantry brigades. Urban combat necessitates reinforcing battalions with tanks, artillery, and engineers. Brigades coordinate the battle, while battalions fight them. Districts, divisions, and brigades reinforce the battalions according to specific task. Individual battalions may have a variety of missions, depending on the situation. Brigades maintain reserves rather than division.

When the town cannot be bypassed and there is no alternative, the OPFOR reorganizes its combat formation to attack a built-up area by assault. Preparations begin with an intensive reconnaissance effort to determine the layout of the defense. Throughout the battle, commanders spend much more time in personal reconnaissance on the ground than they would for a normal battle.

Assault Detachments

In urban area combat, the **infantry battalion** is designated as an assault detachment. This designation occurs when the battalion receives the mission to overcome an enemy strongpoint. Assault detachments are not a specific organization; they are rather a mission. Each company of the assault detachment (battalion) forms into an assault group. The terms *detachment* and *group* specify a distinct combat structure.

The detachment is a task-organized infantry battalion, mechanized or motorized, and the group is a task-organized company. A battalion designated as an assault detachment can be reinforced by a tank company, an artillery battalion, an engineer company, antitank weapons, and air defense weapons. The assault detachment normally has two to three assault groups and a reinforced platoon-sized reserve. The detachment comprises two echelons.

In addition to fire support on hand at company level, the battalion commander retains artillery and mortar units under his control. This provides indirect fire support to the assault groups. Indirect fire weapons can destroy enemy buildings and positions-in-depth and neutralize enemy reserves and counterattack forces. The use of smoke can screen the area being attacked, blocking the enemy's observation and interfering with his movement of reserves.

Assault Groups

The basic building block of the assault groups is a mechanized or motorized **infantry company** reinforced by tank, artillery, and combat engineers. Battalion reserves go directly to the assault groups. This is due to the focus on small-unit actions in the attack.

A typical combat organization for an assault group is--

- A motorized infantry company.
- One or two tank platoons.
- Antitank weapons.
- An artillery battery, in the direct fire role.
- A combat engineer platoon.
- Flamethrower and chemical specialists.

A representative group, such as the one shown in Figure 16-1, might comprise--

- Attack groups consisting of an infantry platoon reinforced by tanks.
- A covering and holding group consisting of up to a motorized infantry platoon reinforced by antitank weapons.
- A fire support group, including attached artillery in the direct fire role and flamethrowers.

- A group of combat engineers equipped with bangalore torpedoes and mine-clearing devices.

In some cases, one or two motorized infantry companies serve as a reserve force. This reserve can either strengthen attacking or holding groups, or carry out a critical task.

Combat Support

The burden of combat in built-up areas falls on infantry soldiers, supported by other arms. The OPFOR stresses the need for tanks to give immediate fire support to dismounted infantry.

Artillery is decentralized for the direct fire role. Higher headquarters provides extra engineers.
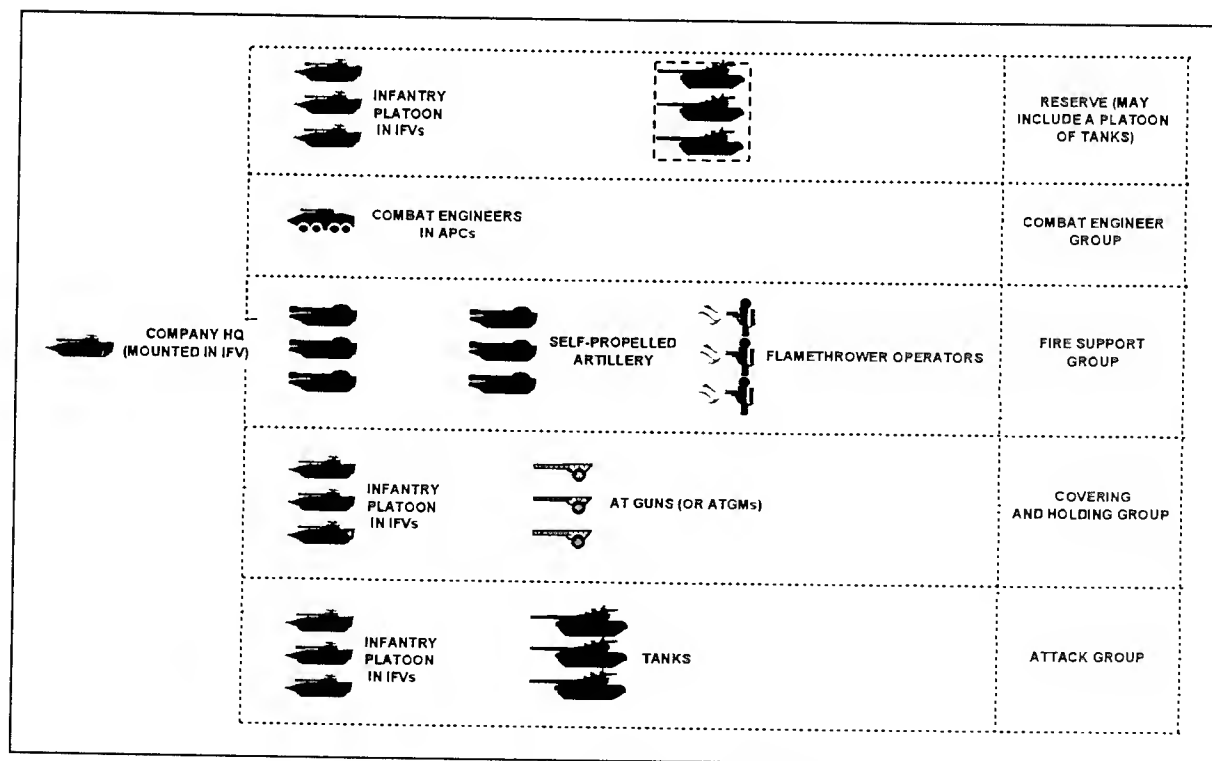
Figure 16-1. Assault group organization.

Tank

Tanks neutralize enemy strongpoints and engage enemy troops in the upper stories of buildings. They move through any open area--gardens for example--as well as on the roads. The fire support of IFVs/APCs supplements the heavy weapon support immediately available to the troops on foot. In offensive urban area combat, tank units have the following typical missions:

- Provide reconnaissance in the approach to the built-up area.
- Serve, with combat arms reinforcement, as an advance guard.
- Cut off or envelop the enemy before he reaches the built-up area.
- Blockade pockets of resistance bypassed enroute to the main built-up area.
- Reinforce infantry in the direct fire role in street fighting.
- Serve as a mobile reserve.

Artillery

Artillery is decentralized during offensive urban area combat. Up to 50 percent of available artillery is attached to assault groups and used in the direct fire role. The direct fire role includes the use of large-caliber guns. Assault group commanders call fire on individual enemy targets and strongpoints. Howitzers and mortars perform counterbattery tasks. Their high-angle fire enables them to reach into the center of the built-up area. Preparatory indirect artillery fire against urban targets is intensive but short, lasting normally only 5 to 20 minutes. As assault units reach the safety line, artillery fire shifts to positions to the rear of the objective.

Engineer

Engineer units accompany advance guard units as they approach built-up areas to clear obstacles and reconnoiter. The tasks of engineers accompanying assault groups include--

- Conduct engineer reconnaissance.
- Clear the approaches to the town.
- Clear areas and fortify them for command posts
- Construct obstacles to protect against counterattacks.
- Destruction of buildings.
- Make entry and exit holes through masonry walls.
- Breach minefields.
- Clear axis of rubble to allow movement of tanks, IFVs, APCs, and artillery.
- Launch obstacle crossing, usually from within 150 meters of the crossing site.

Helicopter

While combined arms assault groups provide the main effort in urban area combat, airborne or air assaults on key points occur. If helicopters are available, they lift motorized infantry troops and insert them into key points in the battle area.

The Air Force provides helicopter support of ground activities. Helicopter support of the offense in urban combat includes--

- Employment of aerial weapons at long ranges to support maneuver units within or adjacent to the area.
- Air assaults to secure key terrain adjacent to the built-up area and to secure key objectives within the built-up area when lightly defended or when enemy fires have been suppressed.

- Combat service support, command and contol (C^2), and intelligence.
- Relocation of combat or combat support units.
- Resupply.
- Observation.
- Use of sensory devices.
- Radio retransmissions.

Fixed-Wing

The Air Force provides all air support to ground combat. Its primary mission is to prevent enemy aircraft from impacting on the ground battle. The employment of air support depends upon the following considerations:

- Heavy air bombardment provides tactical advantages to the attacker. The **shock and concussion** of the bombardment reduce the efficiency of defending troops and destroy defensive positions.
- The **rubble and debris** resulting from air attacks may increase the defender's cover while creating significant obstacles to movement of attacking friendly forces.
- The **proximity of enemy forces** often requires the use of precision-guided munitions (when available) and/or the temporary withdrawal of the friendly forces.
- The **presence of civilians** or requirements to preserve key facilities within the built-up areas restricts the use of air weapons.
- **Limited ground observation** may require the use of an airborne forward air controller.
- The effects of **weather** are always a factor.

During offensive urban combat, fixed-wing support enables the OPFOR to--

- Support the isolation of the built-up area by interdicting entry and exit routes.

- Support attacking units by reducing enemy strongpoints with precision-guided munitions (if available) or low-level bombing runs.
- Conduct reconnaissance and provide detailed information of enemy dispositions, equipment, and strengths.

See Chapter 9, Air Support for additional information.

Air Defense

Antiaircraft weapons, both shoulder-fired SAMs and crew-served systems, protect artillery firing positions and command observation posts (COPs) against low-flying aircraft and helicopters. When not engaged in this primary mission, antiaircraft guns may suppress enemy ground fire. (See Chapter 10.)

Command and Control

Control of urban area combat is **decentralized**. While this puts a heavy burden on the battalion's communications systems, the OPFOR recognizes that only through decentralization can it cope with the tactical problems involved with controlling troops fighting in cities, towns, and villages.

Control of the battalion offense in urban area combat differs significantly from combat in open terrain. Company-sized assault groups fight independently from each other in concurrent actions. A major reason for this decentralization is the greatly restricted area of observation and radio transmission. In urban combat, there is a need to control the movement of each squad-- clearly beyond the battalion commander's capability. Nevertheless, the battalion commander can closely monitor the progress of combat. The OPFOR pays particular attention to the difficulties of coordinating indirect artillery fire in urban combat. This has led to the uncharacteristic decentralization of this arm.

Organization for Combat

Given the characteristics of urban fighting and expected enemy defenses, tactics in towns focus on motorized or mechanized infantry units not larger than battalion-size. An infantry battalion in the main attack advances along one or two main streets and secures all buildings while en route to its objective. A second-echelon battalion prepares to continue the attack of the first echelon. This ensures the constant buildup of combat power. The second-echelon battalion may also have to block an enemy counterattack, act as an enveloping detachment during an envelopment maneuver, or replace first-echelon forces. The battalion may serve as a division reserve as a contingency force.

The battalion COP locates 200 to 300 meters behind the assault groups. The battalion commander personally assigns indirect fire missions to the artillery commander. The artillery commander colocates with the battalion commander. The OPFOR feels the battalion commander personally influences the conduct of battle by staying as far forward as possible.

Methods

The OPFOR uses two methods to **seize a town**. The least favorable method is to plan and conduct a **frontal attack** against a defending enemy to break through the defense on the approaches to the town.

The preferred method is to seize the town **from the march**. This method works best when the town is undefended or defended by limited forces with no major reserve nearby. When this is not possible, the OPFOR tries to surround a town and destroy the enemy with follow-on echelons.

Seizing a town, or key points within a town, from the march is generally a mission for airborne or air assault units, forward detachments, or advance guards. This form of attack may develop during the pursuit of a retreating enemy, in anticipation of a meeting battle, or as a result of a penetration in an attack against a defending enemy. The objective is to seize the town before the enemy can establish an effective defense. The unit can then establish defensive positions to block enemy reserves or withdrawing forces passing through or defending the town, and to secure critical lines of communication for the friendly main force.

During the attack from the march an infantry battalion, suitably reinforced according to the tactical situation, may act as--

- **An advanced guard in pursuit.** The advance guard pursues the enemy on a parallel route, preventing him from breaking contact, and seizing key terrain before the enemy has time to stabilize a defense in the built-up area. It then gives support to the main body during the exploitation.

- **A forward detachment.** A forward detachment avoids contact with the enemy and attempts, from the march, to seize key points in the built-up area. When the battalion has accomplished this mission, part of the unit can hold the objective area while the major portion of the battalion attacks deeper into the village or town.

- **An air assault unit.** The OPFOR has no dedicated air assault units. The division, or district, commander designates light or motorized infantry units as the air assault force to support tactical missions. Airborne troops, special operations teams, and commando companies may perform air assaults. Company-sized air assaults are the most

common. Helicopters lift the troops to capture key terrain or a crossing site and hold it until the main body of troops arrives. (See the *Light OPFOR Operational Art Handbook.*)

- **Enveloping detachment.** A battalion envelops and cuts off the withdrawal of an enemy holding a village or small isolated town.
- **Assault battalions.** Reinforced infantry battalions make up the first or second echelons of an assault on a village or town. In either case, their combat organization, tasks, and assault tactics are probably the same.

Conduct of Attack

The OPFOR prefers to avoid fighting in built-up areas, particularity on State soil, because of the high civilian casualty rates. However, when the attacking unit cannot bypass the built-up area, it will seize it. The division advances rapidly in the march or when exploiting a penetration. It employs an infantry battalion, reinforced by engineers, tanks, and artillery, several kilometers in front of the main body of the division. The mission of a battalion is to bypass and isolate. Failing that, it attempts to seize at least the outer perimeter of the town. If the town is by-passed, second-echelon or reserve forces of the division conduct the attack on the town.

If the division objective is the town, the basic goal of the division is to encircle and isolate the enemy force, block reserves from reinforcing the enemy, and continue to develop the attack by the main force.

If the town is defended, the mission of the first-echelon brigade is to take the built-up area by attacking from the march. An intense artillery and/or air bombardment precedes the attack. The attack exacts a high combat loss. If the attack fails, the commander establishes a blockade and initiates preparations for an attack from positions in direct contact. This attack consists of several converging assaults in different sectors of the town. This splits the enemy defense into several segments for subsequent piecemeal destruction. Intensive artillery and/or air bombardment also precedes this attack.

Tactics

The OPFOR emphasizes assaulting towns from the march when possible even against a defending enemy, to maintain the tempo of the offense. If this tactic is inappropriate, commanders conduct a deliberate preparation for the attack and form assault detachments and groups to seize enemy strongpoints. When conducting the assault, the OPFOR uses the following tactics:

- Assaults follow brief artillery and mortar preparations (5 to 20 minutes). Primary artillery use is in the direct fire support role.
- After destroying strongpoints at the edge of the village or town, assault groups move forward on major roads toward the center of the built-up area.
- Assault groups avoid frontal attacks, emphasizing maneuver and expecting open flanks for both the attacker and defender. They use side streets, alleys, basements, gardens, and holes in walls to approach the enemy's flanks.
- Assault units quickly assume an all-around defense when the enemy exploits an open flank and initiates a counterattack.
- Covering groups, tanks, and fire support groups provide direct fire support

for the assaulting troops. Direct fire covers each floor and window of a building. Infantrymen carry up to twice the normal allocation of ammunition in urban combat to compensate for the characteristic intensity of fire.

The initial assault position should be close enough to the objective so that assaulting troops can reach it in a single dash. Troops use grenades before they enter buildings. They blow down interior and exterior doors and rush through to reduce casualties. Once inside, troops clear the building from the bottom up, room-by-room, floor-by-floor. Leaders tell the soldiers--

- The general direction of the attack.
- Exactly how and where to enter the building.
- At which window or floor to fire.
- Subsequent actions.

Smoke and flamethrowers set fire to buildings to obscure friendly movement and dislodge the enemy.

In the case of light resistance, the OPFOR may move infantry forward by mounting them in either trucks, APCs, or on tanks. Most common, however, is for small infantry units to move on foot along streets, clearing buildings one by one.

Attacks occur day and night. Nighttime attacks have the advantages of creating surprise and obscuring the attacking forces.

When moving along streets or alleys, troops and vehicles move along each side. The left line of troops is responsible for observation and fire into the upper floors of buildings on the right. The right line of troops is responsible for buildings on the left. (See Figure 16-2.)

Frontages

Combat in urban areas requires units to fight on a narrower frontage. Objectives are in less depth. In urban area combat, the units fight in two echelons. The terrain and need to achieve an advantage in the correlation of forces against enemy defensive strongpoints reduces the frontage. The rates of advance and frontages depend on the nature of the terrain and the enemy situation.

Combat on such restricted frontages, although it allows effective concentration of force, also causes the following significant problems of control:

- Difficulties coordinating concurrent activities progressing at different rates--all with heavy fire support.
- Identification of targets, and coordination of fire against targets in depth.
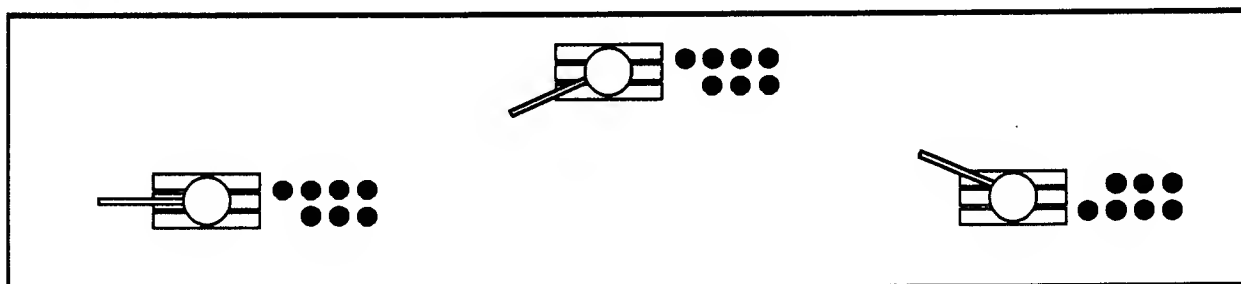
Figure 16-2. Combined tank-infantry unit proceeding down street

- Communications problems caused by a large number of VHF radios operating in proximity screened by buildings.
- Logistics problems, particularly the resupply of ammunition. The use rate is extremely high during intense urban area combat.

The detachment frontage in the assault is generally less than in normal conditions. In town, a detachment usually attacks in one echelon along several parallel streets. The de tachment frontage is approximately 400 to 600 meters. An assault group usually receives one street to clear, with a platoon advancing up each side of it. The group frontage can be 200 to 300 meters. A brigade could be responsible for 2 to 3 km, though its attack frontage would be less.

Where possible, tanks lead dismounted infantry units into the town streets for mutual protection. A fire support team follows these units. (See Figure 16-3.)
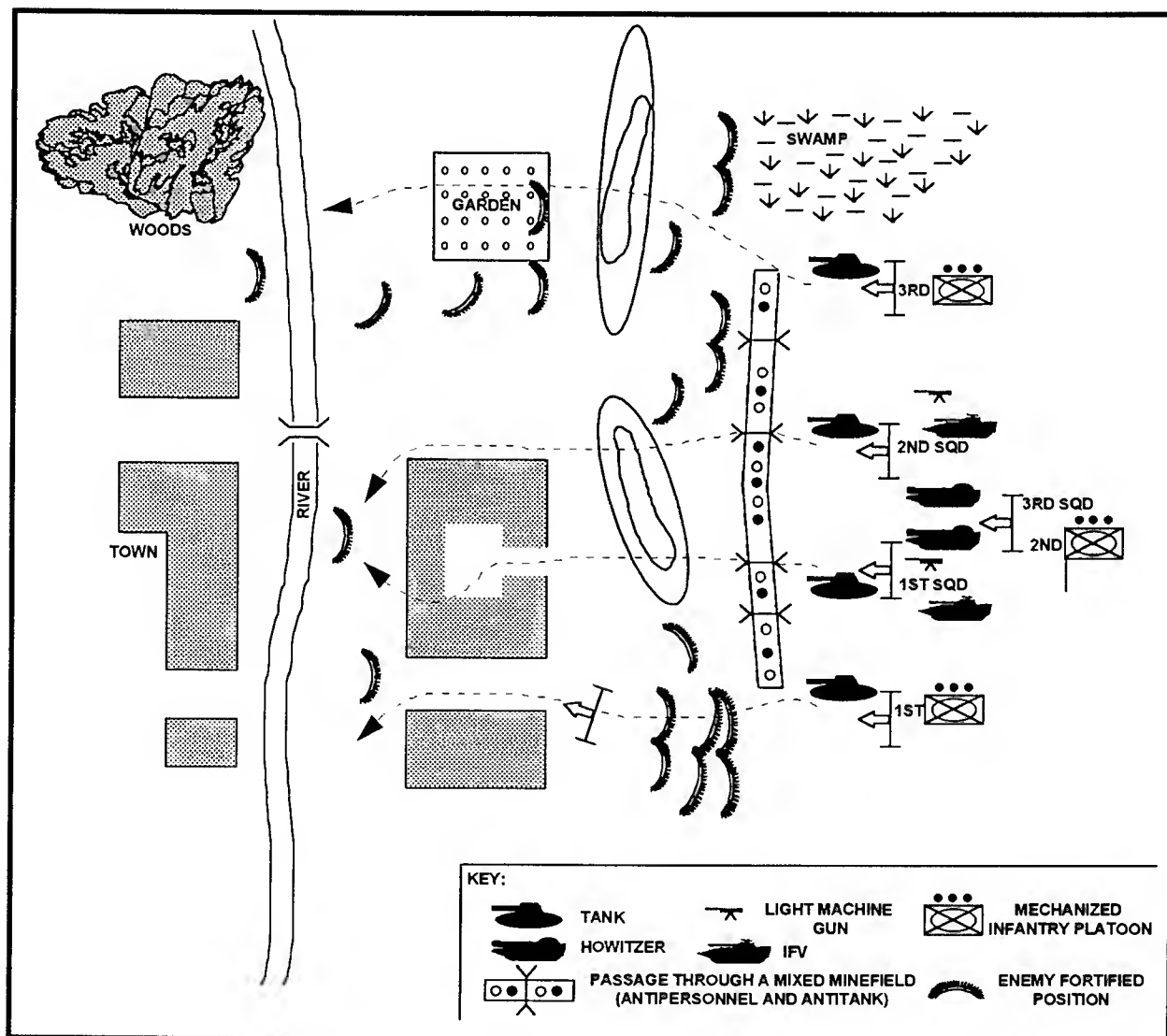
Figure 16-3. Assault group (mechanized) in attack in built-up area.

16-10

Reconnaissance

Combat in urban areas differs significantly from tactical operations in normal field conditions therefore, reconnaissance requirements differ.

The OPFOR places emphasis on pre-combat information gained from informers, special purpose forces, maps, and aerial photography. TheOPFOR also uses information from town plans, tourist brochures, and service facility charts. These provide the latest information about the condition of communications systems, utilities, enemy defensive deployments, location of civilian concentrations, and other related data.

Infiltrators disguised as refugees also frequently conduct reconnaissance functions. Infiltrators or reconnaissance detachments may be in the objective area for several days before an assault. Active reconnaissance may include the use of local residents to provide current essential information of the defender's activities. Raids by reconnaissance teams may capture prisoners and documents. In some cases, raid or reconnaissance teams to destroy selected critical facilities and defending forces prior to a deliberate attack.

Reconnaissance tasks include the determination of--

- Defensive dispositions on approaches to objectives.
- Covered positions leading to flanks or rear of objective.
- Location and strength of defensive strongpoints.
- Main routes through the built-up area.
- Key objectives (buildings) that dominate the area.
- Underground passages available for use by assaulting forces.

- Command posts, reserves, weapon positions, and supply locations.

Reconnaissance patrols and reconnaissance in force, (reconnaissance by combat on a large scale), operate mainly in the terrain surrounding and along the immediate approach routes into the city. Once the battle within built-up areas begins, the OPFOR collects new intelligence information primarily by observation, patrols, and helicopters. It can increase the number of observation points and position them in upper stories of buildings. This added elevation may give improved observation among the ruins where activity can be more difficult to detect.

DEFENSE

The OPFOR recognizes the political and military importance of the urbanization phenomenon. Commanders realize the importance of not only defending built-up areas, but also of incorporating them into the overall defensive plan. The OPFOR regards hamlets, villages, towns, and cities as military (and possibly political and economic) targets which are extremely vulnerable to high-precision weapons and weapons of mass destruction.

Commanders plan to establish their defensive positions well forward of an urban area in order to engage and defeat the attacker on the approaches to and flanks of the built-up area. Only a small portion of the available force holds the center of the village or town. This allows the OPFOR to use normal defensive tactics which are more economical in terms of manpower and equipment. There are, however, circumstances that may dictate the defense of a village or town. These are when--

- Attacking forces break through defenses organized on the approaches and threaten the built-up area proper.

- The built-up area has especially great political, strategic, or economic importance. Within the State, the OPFOR would chose to defend most built-up areas unless it is more advantageous to defend elsewhere.
- It is necessary to defend a built-up area. Examples are seaports or other critical communication or transportation complexes. The OPFOR establishes defenses either in contact or out of contact with the enemy.

Within the State, the defense of built-up areas is the primary responsibility of the less well trained regular and reserve forces supported by significant numbers of personnel from militia units. Militia units, organized according to population distribution and densities, have the mission of village and town defense.

Because of the defensive orientation of the militia's mission as well as its infantry-style training, these units harass and delay advancing enemy troops. These units defend key targets within their local area in a point defense type of action. Because of the familiarity of the militia units with their areas, they serve as anti-landing elements within their local areas. The OPFOR militia conducts mobilization and training exercises stressing the defense of their local areas. These exercises also include the construction of fortifications and strongpoints in urban areas.

Elements of the expeditionary army generally set up urban area combat defensive positions while in contact with the enemy. However, many areas of the State are extensively prepared. Since the defense of the State is the OPFOR's highest priority, this text describes the deliberate establishment of an urban area defense when not in contact with the enemy. Battalions in the second-echelon brigade of a division, or in the second echelon of a brigade in contact with the enemy conduct this defense. In either case, the principles and procedures involved are the same.

A division normally defends urban terrain when employed as a part of the expeditionary army. It may also defend along a main avenue of approach into the military district. For information on how divisions defend in the security zone and main defensive belts/lines, see Chapter 6.

Concept

The concept of defense in urban areas is to draw enemy manpower and equipment into preplanned **kill zones** and destroy them. The tactics and weapon systems used are depend on the situation and terrain. A key principle is to include an urban area in a larger zone of defense rather than to limit the defense of the district to combat within a village or town. In this way, the OPFOR provides commanders sufficient maneuver room to maximize the delivery of available firepower--especially that of tanks--therefore inflicting the heaviest possible casualties.

Enemy movement becomes canalized into the defended zone of the towns and cities by using strongly held positions on the flanks. The OPFOR recognizes that the use of chemical weapons to create contaminated areas to the flanks can achieve the same ends as physically occupying positions and expending enormous amounts of conventional firepower. The use of chemical weapons on State ground is the last option. However, the OPFOR would have no difficulty canalizing enemy movement by flooding fields, possibly blowing up dams, or diverting rivers to win a decisive victory.

OPFOR doctrine calls for controlling the rate of enemy advance by launching local counterattacks. The enemy is to be held on the outskirts of the built-up area to be defeated and repulsed. The concept is to both gain time and induce the enemy to concentrate his forces early. The commanders do not intend to allow the enemy to come to close combat in the center of the villages and towns in the State.

Organization

It is the nature of defensive combat in villages and towns to fight a series of separate battles. In defensive as in offensive urban area combat, the base element is the motorized infantry, or mechanized **battalion**. The infantry battalion commander takes direct command of the units allocated to him, e.g., artillery, tank, and engineers. Direct support by heavy weapons gives him control of the necessary firepower to break up enemy attacks and fully exploit the capabilities of hand-held antitank weapons and small arms.

Combat Support

As in the offense, the burden of combat in built-up areas falls on infantry soldiers, supported by other arms. Artillery remains decentralized for the direct fire role. Higher headquarters provides extra engineers. Tanks and most of the supporting artillery provide infantry elements direct fire from strongpoints, covering any reasonable field of fire. Engineer assets go down to company level to assist in fortifying buildings, creating obstacles, and improving routes between strongpoint. The following examples show how combat support is used in the defense.

Tank

The infantry battalion defending the town has a company of tanks attached, when they are available. The tank company deploys either as platoons or as single tanks set in ambush positions. Tanks serve either in a mobile role with two or three alternate positions for each tank, or in a stationary role reinforcing the antitank defense. On the outskirts of the town, tank units channel enemy forces into the kill zone or conduct counterattacks to slow the enemy rate of advance. Tank ambush are set up on the edge of villages beyond the town limits and on the outskirts of the town proper.

Artillery

Up to 50 percent of district/division artillery, including heavy artillery, is attached to infantry battalions and used in a direct fire role. If the infantry battalion is part of a separate brigade, the separate brigade provides artillery support. Artillery pieces are emplaced either singly or as platoons. They then come under the command of the infantry company commander. Each gun has two or three preselected positions. The artillery remaining under direct control of the brigade or division occupies covered positions outside the environs of the town and delivers indirect fire. The commander of the infantry battalion has direct control of the antitank weapons

The battalion commander integrates all available fires into the **fire plan**. He plans fires to support each phase of the battle. After the initial antitank battle, the tanks and antitank weapons positioned at the edge of the town, withdraw to prepared positions

within the built-up area. Normally a few antitank guided missiles relocate to successive firing positions in the town. Tanks, and other antitank weapons cover major roads, parks, fields, and squares. When available laser-designated artillery covers these areas. Planned artillery and mortar targets cover possible enemy approaches to the built-up area. Artillery alternate positions locate where the guns can also be used in the direct fire role. The guns cover lines or areas containing natural or engineer obstacles. Weapons position at several elevations to take advantage of the terrain and maximize weapon characteristics.

Machineguns, grenade launchers, and mortars locate at different levels on upper floors in garrets and windows overlooking enemy approaches to the buildings. OPFOR tacticians believe the attacker in urban areas experiences difficulty directing fire at targets in upper floors of buildings during engagements.

In addition to the firepower under the direct command of the battalion commander, the brigade has an indirect fire support plan. The weapons remaining under the control of the brigade locate outside the town to facilitate their redeployment. Ground forces also receive support from fixed- and rotary-wing aircraft. However, they must request this support through channels.

Massed artillery used to break up enemy formations approaching the built-up area is under brigade and district/division control. Whenever possible, the OPFOR places massed artillery on the enemy's flanks to canalize movement into the preplanned kill zones. The defensive fire plan in the early stages of the battle is designed to separate enemy infantry and tanks.

Engineer

The battalion has engineers attached, usually an engineer platoon. The engineer platoon remains under the centralized control of the battalion commander. The engineer platoon--

- Mines the gaps between strongpoints, streets, and open areas.
- Prepares obstacles.
- Either destroys bridges over rivers and canals or prepares them for demolition.
- Creates passages through buildings for covered movement in and between strongpoints.
- Demolishes buildings to clear fields of fire and to create obstacles for enemy armor.

Helicopter

The Air Force provides helicopter support to ground combat. Missions for helicopters during the defense of urban combat include--

- Employment of aerial antitank weapons at long ranges on approaches to the town/village or within the built-up area using terrain-following flight or pop-up techniques.
- Rapid insertion or relocation of personnel (for example, antitank teams and reserves).
- Rapid concentration of forces and fires to meet unexpected enemy maneuver or penetration.
- Combat service support, C^2, communications, and reconnaissance activities.

The Air Force also provides **direct air support** to ground combat. Direct air support missions are airstrikes against hostile targets close to friendly forces. These missions require detailed integration with the fire and maneuver plans of supported forces to increase the effectiveness of ground forces. Requests for helicopter support follow the same procedures as the request for other types of air support. Further information is in Chapter 9.

Fixed-Wing

During defensive battle, fixed-wing air support--

- Strikes positions, formations, assembly areas, and any other concentrations of enemy forces outside the built-up area.
- Destroys enemy aircraft used in close support of ground combat.
- Neutralizes enemy forces attempting to bypass the town.
- Breaks up enemy attacks.
- Provides air cover over the battlefield.
- Provides precision-guided munitions (when available) support of counterattacks against overrun friendly strongpoints.
- Conducts air reconnaissance and provides detailed intelligence of enemy dispositions, equipment, and strengths.

Air Defense

The allocation of air defense assets supporting the defense closely parallels that of the offense. The OPFOR recognizes some differences in the nature of air threats to forces engaged in the defense.

Basic air defense doctrine does not change when units operate in urban areas. The fundamental principles all apply to the employment of air defense assets. The commander must consider the following when developing his air defense plan:

- Enemy air targets, such as principal lines of communication, road and rail networks, and bridges, are often found in and around urban areas.
- Good firing positions may be difficult to find and occupy. Therefore, the number of weapons the commander can employ may be limited.
- Movement between positions is normally restricted in built-up areas.
- Radar masking and degraded communication reduce air defense warning time for all units. Air defense control measures must be adjusted to permit responsive air defense within this reduced-warning environment.

Positioning of antiaircraft (AA) guns in built-up areas is often limited to more open areas without masking such as parks, fields, and rail yards. Towed AA guns (separated from their prime movers) may be emplaced by helicopter onto rooftops in dense built-up areas to provide protection against air attacks from all directions.

Shoulder-fired SAMs provide protection for battalions the same as in any type of combat. Within the built-up area, rooftops normally offer the best firing positions. Heavy machineguns emplaced on rooftops can also provide additional air defense. For further information on air defense support see Chapter 10.

16-15

Organization of the Defense

Far fewer troops are necessary to defend a town than to seize one. A company can defend a sector up to 600 meters wide and can create strongpoints in key buildings manned by platoons. Defense combat techniques are the same as those used in the offensive. Defense of a town requires more engineer support. The OPFOR uses patrols and ambushes extensively.

The defense of a town requires all-around defense based on outer and inner defense zones. The outer, or first echelon, defends within or near the buildings on the edge of the town. The inner, or second echelon, consists of strongpoints and alternate sites positioned to halt an enemy penetration. The first priority of the defending units is the destruction of infantry accompanying tanks. Without the infantry, the tanks are easier targets. Tanks in the defense serve as part of platoon strongpoints.

An infantry **battalion** normally conducts **defensive actions** in built-up areas as part of a brigade. Reinforced to meet the tactical situation, the battalion deploys to stop enemy attacks on main or secondary approaches to the village or town. The battalion is in either the brigade first or second echelon of defense. As a first-echelon unit, its mission is to prevent penetration of the built-up area. As the second-echelon unit, its task is to contain enemy penetrations and restore first-echelon positions. There is a degree of tactical flexibility within these missions in that battalions may find that the direction of enemy assault has changed a primary approach into a secondary one or vice versa. Battalions positioned on primary approaches have smaller frontages than those placed on secondary ones.

While in Contact

Troops in contact with the enemy are most likely to set up a defense of a town at the following times:

- After an unsuccessful meeting battle or attack.
- During a withdrawal.
- When a tactical stalemate during an attack requires a blocking action until resuming the offense.

While out of Contact

The defensive layout of a village or town by troops not in contact with the enemy gives time for reconnaissance and building of fortifications. Such preparations are completed under the protection of units located well beyond the outskirts of the town. A defense of this type may protect a naval or air base, port, or an economic area up to several hundred kilometers behind the border or line of contact. Second-echelon units, reserves, or militia usually defend these areas. The militia units in and around hamlets, villages, towns, and cities situated along probable enemy avenues of approach maintain a high state of combat readiness.

Conduct of the Defense

The battalion commander **controls** his unit from a COP. The COP locates in a building where the commander can observe his company strongpoints. Before the enemy attacks, the battalion commander ensures his radios, landlines, and messenger communications are all in working order. During combat, radio is the primary means of communication.

Security Force

A mobile security force engages enemy reconnaissance and advance guard units before they reach the edge of the built-up area. This ensures the exact locations of the main defense positions remain concealed. The troops occupying the main defense positions remain concealed and covered during enemy probing attacks and following enemy preparatory fire. The security force maneuvers to meet the enemy while combat remains on the outskirts of the built-up area. Once enemy pressure builds up, the security force withdraws and takes up its prepared defensive position.

Battalion Defense Area

A reinforced infantry battalion in urban area combat deploys either in one or two echelons depending on the size and layout of its assigned sector. When the battalion deploys in a single echelon it creates a reserve of one or two platoons. There are factors in favor of each type of deployment. A single echelon allows simultaneous use of all weapons to create a greater concentration of firepower. Because it lacks depth, it decreases vulnerability to attack by high-precision weapons and weapons of mass destruction. Conversely, a two-echelon defense provides the necessary depth to facilitate mutual support by units, and protection of a salient or exposed flank. When the battalion deploys in two echelons, the task of its second echelon is to hold a position and counterattack penetrations of the battalion's first echelon. Battalion second echelon companies conduct counterattacks along pre-planned routes. If the battalion deploys in a single echelon, the battalion reserve conducts the counterattack, perhaps in conjunction with a brigade reserve.

Defending battalions can form **assault groups** in their second echelon, identical in strength and structure to those used in the attack. These are used to recover strongpoints or key buildings captured by the enemy.

Infantry battalions usually hold a number of company strongpoints. To accomplish this, the battalion is reinforced by tanks, antitank weapons, and artillery. In addition to artillery in a direct fire role supporting infantry units, other artillery and mortar units provide indirect fire support. Antitank weapons position to cover road junctions and to fire along streets.

The exact frontage and depth of the battalion depend on the following factors:
- The echelon.
- The combat strength of the battalion at the time of the defense.
- The estimated strength of the enemy.
- The layout of the town and the types of buildings.

The sizes of defensive positions and areas are generally:
- Infantry squad--A small building, part of a large building, or a gap between buildings.
- Infantry platoon--Strongpoint defense of one or two buildings.
- Infantry company--Strongpoint defense of a town block or several buildings.

Infantry battalion--Defense area usually consisting of one or more blocks.

Company Strongpoints

The basis for defense in both the first and second echelons is a series of platoon and company-sized strongpoints. Terrain and gaps between strongpoints limit large unit maneuvers. Heavily reinforced company-sized strongpoints provide an efficient system of defense. The effectiveness of the system depends to a large extent on the communications between these strongpoints and their higher headquarters, and the ability

of commanders to move reserves within the defensive network.

Once the enemy reaches the edge of the built-up area, combat breaks down into a series of small-unit battles at the company strongpoints. These localized engagements are fought at close range with both heavy and hand-held weapons. If the enemy succeeds in penetrating a company strongpoint, the OPFOR immediately calls in a heavy volume of artillery and mortar fire to prevent enemy movement of reserves into the sector.

Strongpoints are expected to continue to resist even when encircled. Additional reserves of ammunition and other supplies can be pre-positioned in them to provide a considerable measure of tactical independence.

Reinforced infantry companies conduct the defense from strongpoints each with a frontage of 100 meters to 200 meters. Each company is reinforced by tanks and artillery according to its mission and the tactical situation.

Strongpoints position for all-around defense in masonry and reinforced concrete buildings (See example in Figure 16-4.) Bricks or sandbags block doors and windows not in use. Embrasures for firing hand-held weapons are knocked through walls. Stairways are mined, barricaded, or destroyed. "Mouse-holing" and using ropes and ladders provides access between floors. Soldiers make underground passages between strongpoints. This establishes communication routes protected from artillery or chemical contamination. Doctrine calls for the use of basements as shelters from the effects of artillery and air strikes. Weapon systems locate on different floor levels to cover dead space. Snipers and shoulder-fired SAMs deploy on roofs and in attics. Figures 16-5 through 16-7 provide examples of urban combat fighting positions.

Reconnaissance

When time allows, a battalion commander makes a full reconnaissance of his assigned defense sector of the village or town. Company and attached unit commanders and appropriate staff and logistics officers accompany the commander on this reconnaissance. Based on this reconnaissance, the battalion commander locates the defending companies' strongpoints and supporting detachments, observation posts, and kill zones.

Commanders realize the criticality of reconnaissance and the gathering of tactical intelligence throughout the urban defensive battle. Battalions obtain information from observation and listening posts, adjacent units, and from the brigade staff. While in defensive positions on the outskirts of the built-up areas, the battalion sends out mounted and dismounted reconnaissance patrols to maintain contact with the enemy. Static patrols deploy as far forward as 1000 meters in front of the defensive positions. When combat moves into the town, foot patrols remain in contact with the advancing enemy. Ambushes locate on the most likely enemy approaches both to maintain combat security and to gain tactical information.

While defending the State, information is provided by--
- Villagers.
- Townspeople.
- Farmers.
- Sympathizers.

This makes the acquisition of reconnaissance and tactical intelligence significantly easier.

Figure 16-4. Example defense of building.
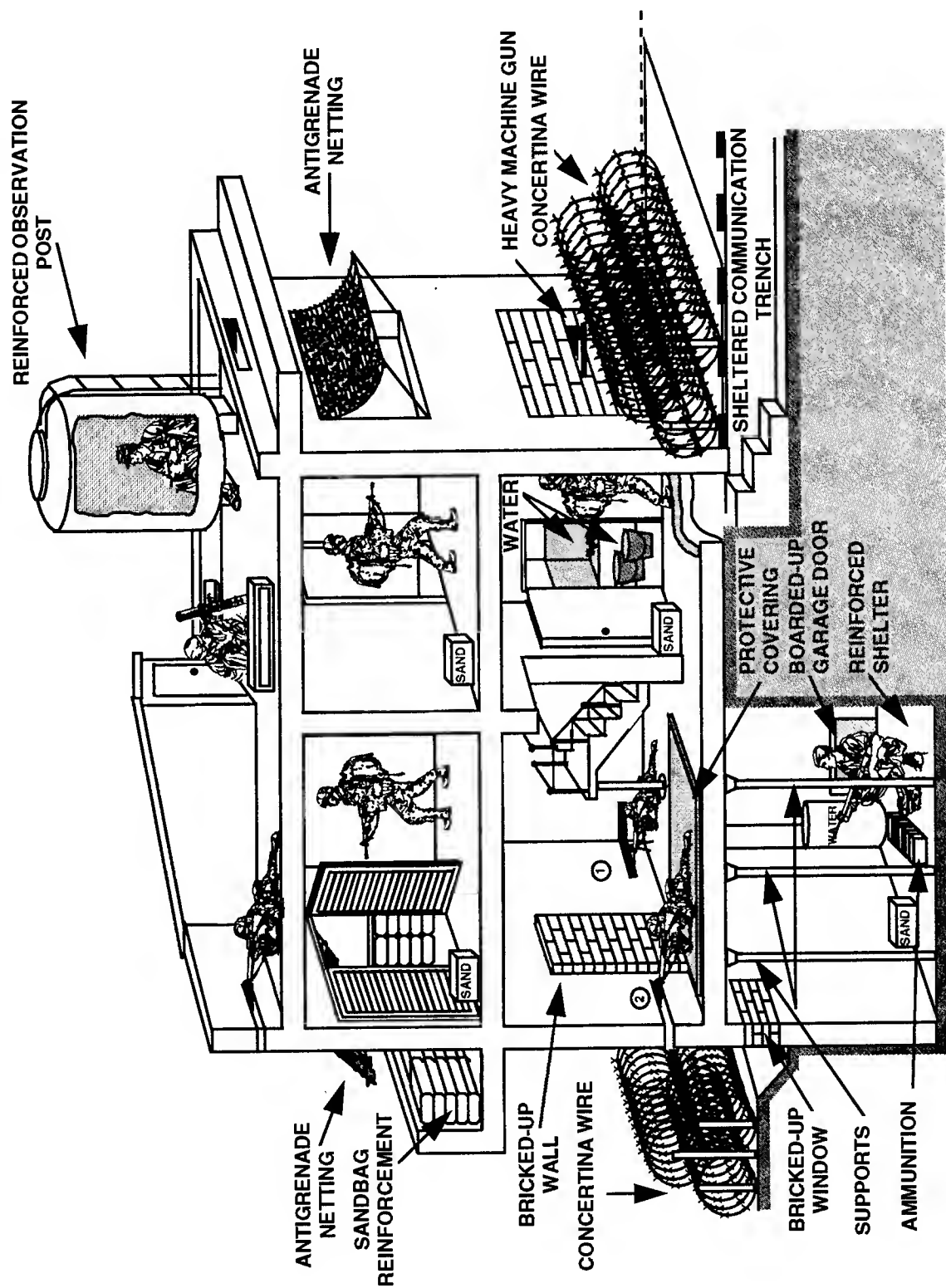
Notes:
① Flanking machinegun-under staircase
② Reinforced loophole for firing from a prone position

16-19

100-150

40

200

200
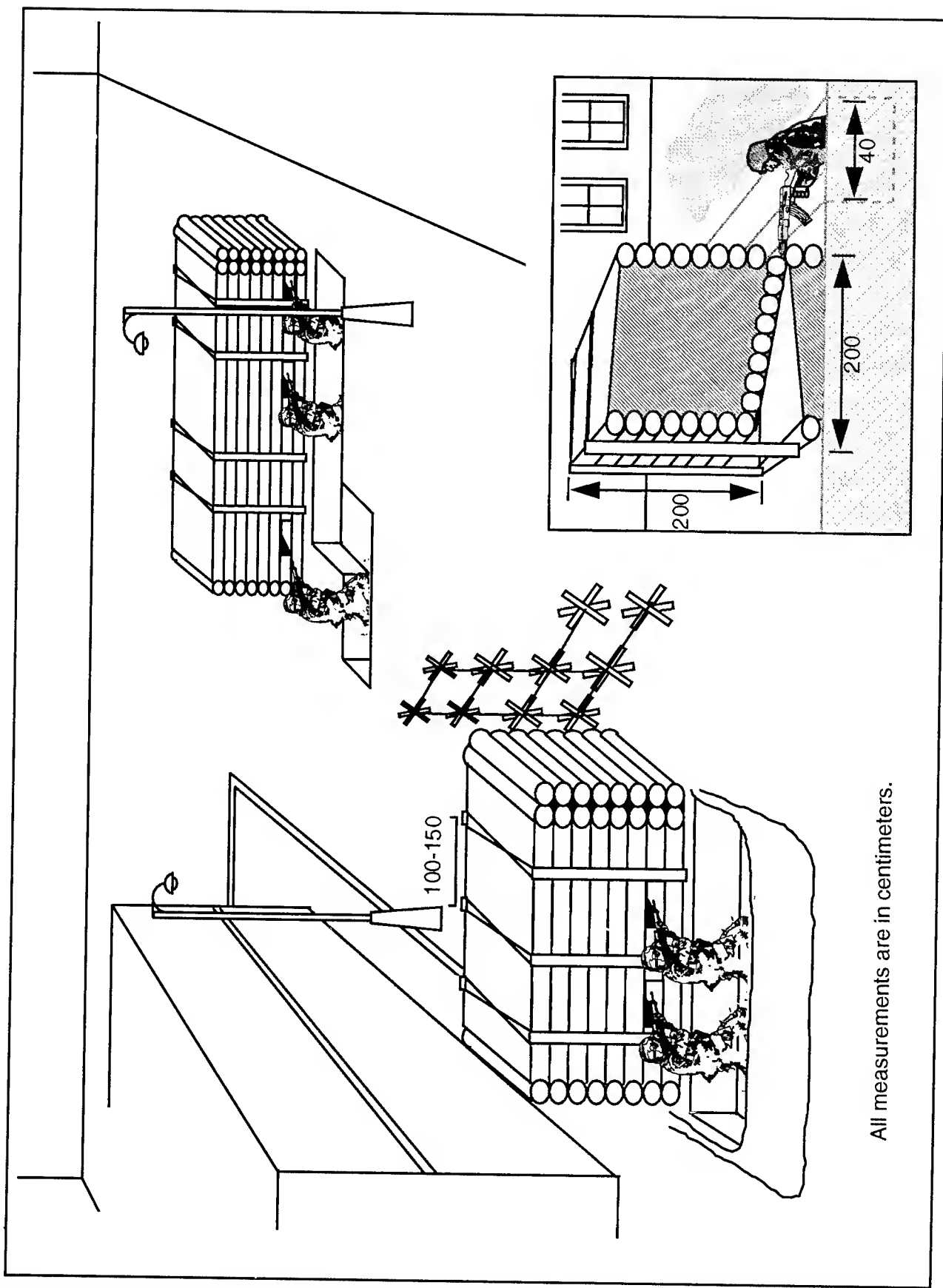
All measurements are in centimeters.

Figure 16-5. Representative urban defensive position.

16-20

(SUPPLEMENTARY POSITION)

P = PRIMARY POSITION
A = ALTERNATE POSITION

Wet down muzzle blast area to prevent dust from exposing position or obscuring vision.

Weapon is fired at an angle through firing port- thus providing maximum protection to crew.

Muzzle/Blast should not protrude beyond the wall to minimize detection.

* Overhead cover not shown.
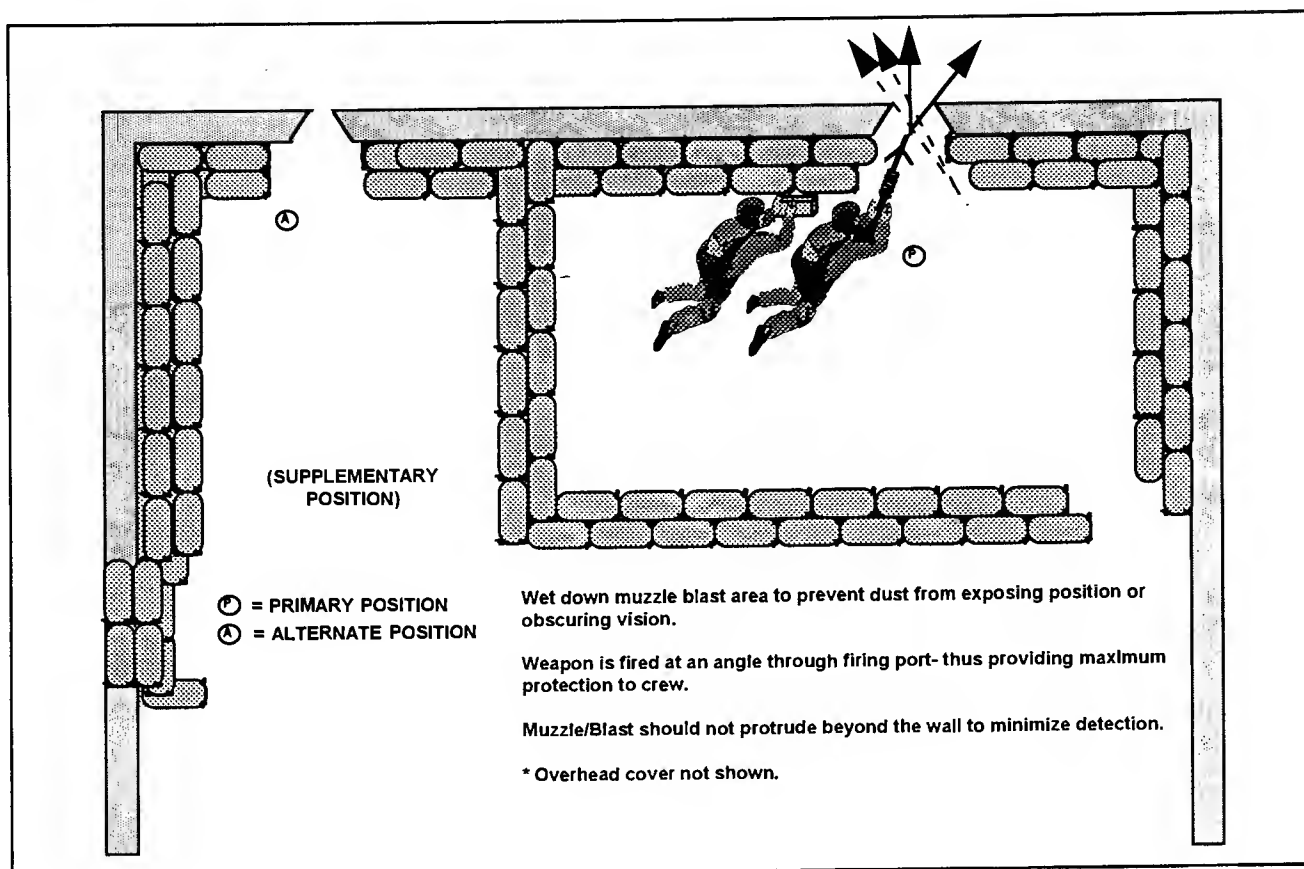
Figure 16-6. Example machinegun position.

WIRE MESH

WET BLANKET

GRENADE SUMP

SHELTER
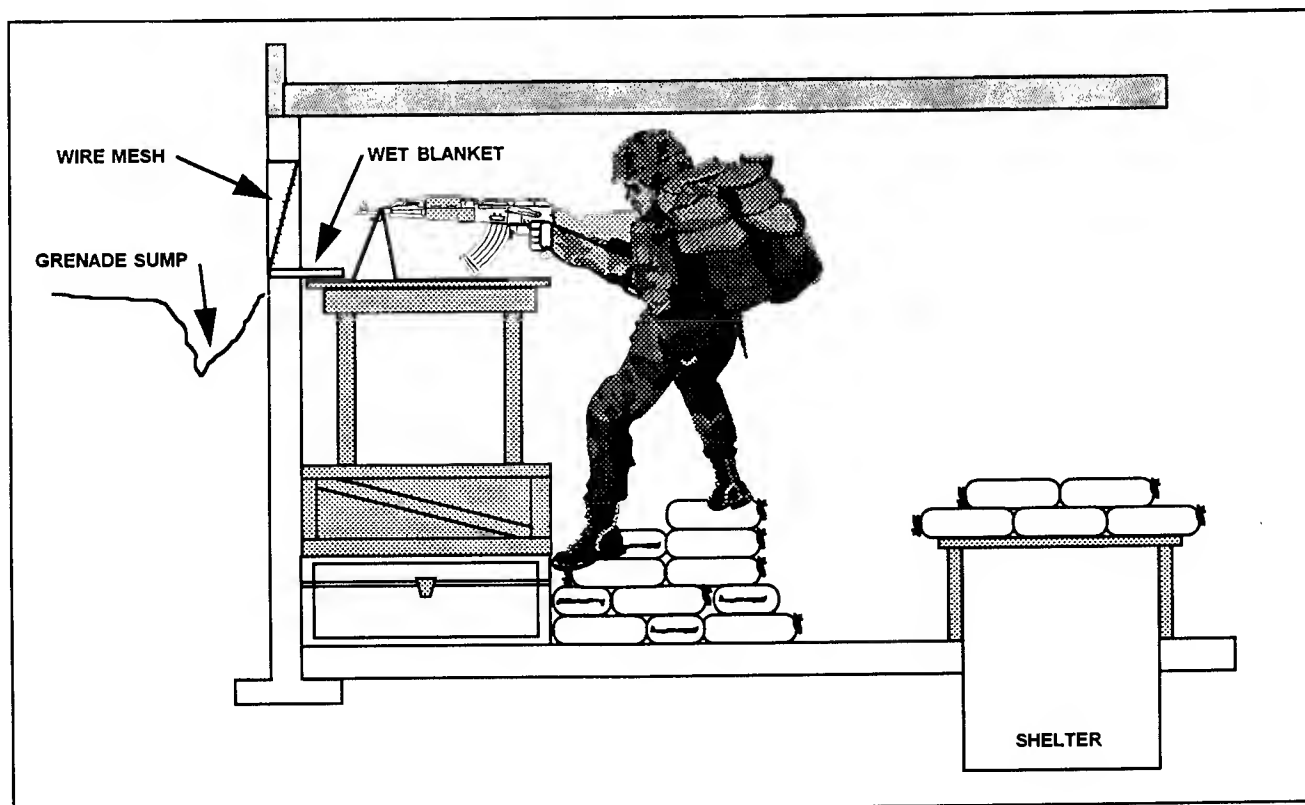
Figure 16-7. Example cellar firing position.

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Chapter 17
Combat in Mountains

The OPFOR regards mountains as obstacles to be breached with attacks. As in other environments, the OPFOR defends to gain time. This allows it to concentrate forces for the offense or economize forces allowing it to mount an offense elsewhere. The principles of offense and defense, with some modifications, are applicable to this environment. Although the OPFOR believes that mechanized infantry units must be capable of fighting in mountainous terrain, it intends to use infantry-heavy forces most often.

Mountain environments vary widely according to soil composition, surface configuration, altitude, latitude, and climatic pattern. The OPFOR considers any relief feature rising 200 meters above the surrounding area to be a mountain. The following conditions hamper combat in mountains:
- The number and condition of roads.
- The screening effect of mountains on electronic equipment.
- Fluctuations in weather.
- Increased wear and tear on equipment, increased fuel consumption, and logistical requirements.
- Reduced rates of advance.
- Slides and floods.
- Difficulty of bypassing contaminated zones.
- Limited maneuver space for troops and vehicles.
- Masking of artillery fires.
- Requirement for special training and equipment.

MARCH

Vehicles maintain a 100- to 150-meter interval while conducting a march. The limited routes and likelihood of ambushes make reconnaissance critical for combat success. During the march in mountainous terrain, the mission of combat reconnaissance patrols and the advance guard become paramount. Low mountains and hills may cut the rate of march in half, even without the additionally slowing effect of enemy action, poor weather, or natural obstacles.

Mountainous terrain and climate have a negative effect on troops and equipment. Steep slopes reduce movement rates approximately 50 percent. For example, the dismounted rate of march decreases from the normal 4 to 5 kilometers per hour down to 2 to 3 kilometers. The carrying capacity of transport vehicles reduces by an average of 20 to 25 percent. Fuel consumption increases by as much as 75 percent on snow-covered mountain roads. The increased altitude reduces engine power. At altitudes above 3,000 meters, mountain sickness (hypoxia) is a potential problem for troops.

OFFENSE

The nature of the terrain governs offensive action in the mountains. The goals of mountain offensive actions are to control passes, road junctions, built-up areas, and adjacent high ground. Attacks in rough

terrain usually occur from positions in direct contact with the enemy. An attack from the march against a defending enemy occurs only when valleys and mountain plateaus facilitate the movement of tank and motorized infantry units. Close and deep envelopments are essential in mountain combat to overcome enemy strongpoints and ambushes. The depth of objectives in mountainous terrain is less than the normal.

OPFOR tacticians recognize the unique characteristics of mountain warfare but consider those characteristics neutral because of the effects on both friendly and enemy forces. For example, road networks are usually poor and limited, making them vulnerable to disruption by engineers on either side. Rivers can be impassable in wet weather, but can also be major axes of advance when dry. Sharp relief features facilitate covert approaches and reduce observation. Ridges, valleys, and roads are the primary avenues of attack.

The OPFOR attempts to locate gaps in the enemy's defenses, dead space, and concealed approaches to the enemy's position. The commander may create a breach by reducing one or two defensive strongpoints with the heaviest available fire support. He then follows this with a smokescreen. Coordinated diversionary attacks on the flanks or rear normally accompany frontal attacks. When not supported by diversionary attacks, the frontal attack must have very heavy air or artillery support.

Organization for Combat

The OPFOR does not have special mountain warfare units. Regular mechanized, motorized, and light infantry units train to fight in mountainous areas. The light infantry, special operations forces, and airborne forces are the best suited to fight in the mountains.

The OPFOR emphasizes the use of combined arms forces, including tanks and artillery, in the mountains. The terrain isolates forces from each other and narrows the zone of advance. This dictates that units at battalion level and below conduct the majority of combat. The OPFOR attempts to get tanks into the least accessible areas because of their utility in the fire support role. It also uses artillery in the direct fire role. Mortars provide extra high-angle artillery support and are ideal for mountain operations. In mountains, the battery is the basic firing unit because of restrictions on deployment. Combat in the mountains requires engineer reinforcement. Due to the difficulty, or lack, of lateral movement, commanders may form self-contained combat groupings for each axis. These units form by breaking down supporting arms units and allotting them to maneuver units.

Because of the difficulty in passing one echelon through another and in shifting axes in constricted terrain, units from division down often advance in one echelon. However, a two-echelon combat formation is also possible. In an advance along a narrow valley, the OPFOR may sometimes even use a three-echelon formation. The OPFOR maintains strong reserves in this environment

Frontages

Zones of advance tend to be much wider in mountains, though actual attack frontages and strike sectors within them are much the same as on flat terrain. Attack frontages depend on the terrain. In a narrow valley or canyon, a company usually attacks on a 100- to 300- meter frontage. On a mountain plateau or broad valley, the frontage may increase to 1,000 meters or more.

Variations from Normal Attack

There are major differences from attacks on flat terrain. A thorough evaluation and subsequent exploitation of terrain are essential. Planning and orders require more detail. For these reasons, and because there are rarely sufficient routes and space for deployment, attacks from the march are uncommon. Most attacks are from positions in direct contact, despite the loss of surprise and momentum. Dismounted mechanized or motorized infantry troops lead the attack, not tanks. The OPFOR uses a sizable proportion of the assigned artillery in the direct fire role.

Meeting Battle

The meeting battle in mountainous terrain is basically the same as on normal terrain. The employment of forces is more constrained, however. Units remain alert for ambushes. Helicopters and ground reconnaissance patrols focus on the major axis of advance and scout for likely ambush points, enemy strongpoints, and obstacles. On contact with the enemy, the OPFOR deploys in prebattle and battle formations as much as possible. Sometimes only the lead units can deploy. If they cannot easily defeat the advancing enemy force, an enveloping detachment deploys to attack the enemy from the flank or rear. The enveloping detachment attempts to cross terrain where the enemy does not expect action. It then conducts a surprise attack. If an air assault is possible, the OPFOR would conduct vertical envelopments, acting as either an enveloping detachment or in support of a ground enveloping detachment.

Attack Against Defending Enemy

The attack against a defending enemy in mountainous terrain follows basic OPFOR tactics, but on a smaller scale. Due to the limitations of mountainous combat, brigades and divisions usually cannot maneuver subordinate units from one axis to another. Therefore, the OPFOR emphasizes maneuver at the battalion level and below. A strongpoint defense by a small force in mountainous terrain can delay or defeat a much larger force because of the attacker's limited ability to concentrate firepower.

When terrain permits, attacking units below battalion usually dismount. When troops dismount, they attack in combat formation using fire and movement with 6 to 8 meters between each soldier. In mechanized units, IFVs or APCs provide supporting fire and advance closely behind the dismounted troops. Mountainous terrain limits the ability of artillery to provide indirect fire support. Therefore, tanks, if available, usually support mechanized and motorized infantry troops with long-range direct fire, not as the main assault force. When available, the OPFOR relies heavily on aviation fire support in mountainous areas.

Whenever possible, a mechanized infantry company conducts a mounted attack and moves along roads. If the initial assault is unsuccessful because of enemy fire or the inability to attack mounted, troops dismount and attempt to envelop the enemy while tanks support by fire.

Infantry battalions often attack independently, in separate zones, because of the limited number of routes in mountainous terrain. Battalion commanders receive missions lasting longer than usual and can receive attachment of artillery, mortars, tanks, and engineer units. The amount and type of attachments vary depending on the infantry battalion's mission.

Infantry companies can--
- Maintain contact with prepared enemy defensive positions.
- Act as an enveloping force for a battalion or brigade.
- Conduct heliborne landings.

The maneuver of the infantry company most often used by the OPFOR is an envelopment. Typical objectives include seizing critical heights, crossings, road junctions, and passes in the enemy rear and on his flanks. Infantry companies normally receive artillery, mortar, and engineer reinforcements.

OPFOR tactics in the mountains are to bypass enemy defensive positions, attack the enemy from the flanks and rear, and break up coordination between defending units. Specially tailored brigade and/or battalion groups may launch attacks on several axes (mainly in valleys and along roads and bridges). The restricted mountainous terrain dictates that companies normally attack on one axis, battalions usually on one, and brigades along two or three. Specially equipped helicopters assist in communications. The OPFOR uses combat engineers extensively. It may attach them as low as platoon level.

To mount a successful attack, commanders--
- Avoid a frontal attack of a hilltop and employ envelopment techniques.
- Use infantry companies and battalions as basic attack units.
- Use continuously massed artillery fires.
- Emphasize the use of infiltration units.
- Expand engineer support.
- Coordinate more thoroughly.
- Evaluate and exploit the terrain.
- Ensure artillery is employed correctly and can react quickly to unseen targets.
- Attack defenders on the far side of terrain features with aircraft.
- Flush out defenders from strongholds such as caves or confined areas, with chemical agents and fire.

Attack from the March

Terrain restrictions can make deploying from the march impossible. Security measures become critical, and surprise by the attacker is more difficult. In the OPFOR view, well-prepared defenders generally have several advantages over attacking units, some of which are--
- The defender is probably more familiar with the terrain.
- The defender can achieve surprise more readily.
- Attackers are more vulnerable.
- The defender is more mobile.

Attacking directly from the march is possible only when routes and space permit deployment. Since room for maneuver and fire support, and detailed knowledge of the terrain and enemy defenses are required, attacking directly from the march does not occur often.

Attack from Positions in Direct Contact

Attacking from positions in direct contact provides the time for commanders to--
- Make personal reconnaissance.
- Develop fire support plans.
- Plan enveloping attacks.

However, the fact that attacking forces are vulnerable to enemy fire while in their static positions is a great disadvantage.

Envelopment

The offense in the mountains consists of a series of attacks to seize heights, ridges, passes, and valleys. An attack in the mountains usually occurs from position in contact. Brigades and/or battalions attack on independent axes along roads, valleys, and ridges. Maneuver generally consists of isolating separate objectives by double or single envelopment. Several secondary attacks support the main effort.

Attacks along ridges may assist the penetration in a valley. The OPFOR conducts an envelopment maneuver over ridges to seize commanding heights and road junctions in the enemy's rear and on his flanks. Heavy concentrations of artillery, tanks, and aviation assets may reinforce the attacking forces.

An enveloping detachment normally performs the enveloping maneuver. Its mission is to strike at enemy forces on their flanks or in their rear. The OPFOR stresses the importance of enveloping detachments in offensive battle in mountainous areas where typical missions include seizing key terrain features: heights, passes, defiles, and tunnels. The detachment usually consists of a reinforced--

- Platoon at company-level.
- Company at battalion-level.
- Battalion at brigade-level.

Although the OPFOR normally attacks from positions in direct contact, it may have occasion to conduct an attack from the march. In this case, the main body advances in march formation along roads, valleys, and ridges while an enveloping detachment deploys on less passable terrain on a parallel route. Helicopters can rapidly move units over rugged terrain and provide flexibility to the commander. This allows him to economize forces in one area and to mass forces in another area. Airborne or air assaults may perform envelopments or block enemy withdrawals.

Infiltration

The OPFOR emphasizes infiltration into the enemy rear during mountainous combat. Infiltration is valuable during the offense and defense. The OPFOR employs it in support of deception, and intelligence collection, or to posture a unit for an attack. Infiltration moves forces through an enemy-held area to a position of advantage in the enemy's rear. From there, the force uses other forms of maneuver to attack its assigned objective. Infiltration differs from a penetration. In the penetration, the OPFOR exerts maximum combat power to pass through an enemy defense. In an infiltration, infiltrating units seek to avoid enemy defenses and pass through gaps in the defense. Units then form for the attack.

Although not limited as to scale, the largest infiltration should be brigade (rarely), the smallest, a platoon; the optimum is a company. Infantry units are especially valuable for mountainous infiltration. Battalion-sized infiltrations usually occur the night before a scheduled OPFOR attack. Commanders use infiltrations to--

- Attack positions in the enemy rear.
- Secure key terrain in support of the main attack.
- Disrupt enemy rear operations.
- Establish ambushes along likely enemy avenues of retreat.

Pursuit

OPFOR pursuit tactics in the mountains are the same as the basic pursuit concept, with terrain limitations. Adequate routes for parallel pursuit may not be available, and frontal pursuit alone can be extremely difficult. An aggressive pursuit would allow for the subsequent maneuver by battalion and below to destroy enemy forces.

DEFENSE

The OPFOR defense stresses thorough reconnaissance, well-organized outposts, continuous flank security, and swift counterattacks by the second echelon. Constant observation and patrolling detect and prevent envelopments.

Combat Formation

A two-echelon defense is standard in mountain areas. In sectors unsuitable for movement, the defense organizes in one echelon, with a reserve, and for only receives limited resources. The defense organizes to cover all possible areas of attack. Mutually supporting platoon and company strongpoints are essential with gaps covered by patrols. Strongpoints use forward- and reverse-slope positions and locate for 360-degree defense. The strongpoints hold even if surrounded. Reconnaissance, patrols, obstacles, demolitions, and ambushes cover the intervals between them.

The OPFOR makes effective use of ambushes in mountain combat, not only in gaps between positions, but in front of them and in depth. Part of the second echelon serves as an antilanding reserve. It guards against the enemy's use of airborne or air assault forces to bypass forward defenses.

Fighting in Depth

If the enemy succeeds in penetrating the defense, strongpoints continue resistance on the flanks, even if totally encircled. The OPFOR conducts counterattacks using prepared routes whenever possible.

Defending Key Terrain

Normal OPFOR defensive principles apply to mountain warfare. Forces normally deploy along roads, valleys, on flat mountaintops, and on forward and reverse slopes. The OPFOR makes extensive use of the following to protect personnel and equipment:
- Ravines.
- Trenches.
- Narrow and deep gorges.
- Tunnels.
- Passageways.

Mountainous terrain has a twofold effect on defending forces. The ruggedness of the terrain and the presence of obstacles limit maneuverability and force the enemy to move primarily along valleys, roads, and mountain ridges. This reduces the enemy's momentum of advance as compared to that on normal or flat terrain. Coordination and communication between units on individual axes separated by natural obstacles are therefore more difficult. For these reasons, forces assuming the defense in mountainous terrain can establish stable defenses using fewer personnel and less equipment than on normal terrain. The strongest and most deeply echeloned defenses locate on sectors intersecting axes of likely enemy advance. Examples of these likely axes are road junctions, commanding heights, and passes. Company and independent platoon strongpoints supplemented by minefields and other obstacles cover difficult avenues of approach.

Passes

The OPFOR considers mountain passes as the tactical key to an entire mountain range. Therefore, it assigns the largest part of the force to defend them. In defending a pass, the OPFOR occupy the heights that dominate the pass as well as key spurs on the approaches to it. Flanking fires and crossfires cover the approaches to the pass. Engineers mine roads through passes and prepare narrow points for demolition. The defenders may also install mines to create landslides. Also, the OPFOR covers the mountain passes by holding the ground dominating the approaches. Part of the defending force deploys in the pass itself. Obstacles and mines are laid on the road through the pass and covered by fire. Fire from either side covers narrow canyons.

Ridges

Battalion defense areas organize along or across mountain ridges. Forward-slope defense is the preferred form when not in contact with the enemy. Strongpoints locate on the forward slopes. A small portion of the force remains on a reverse slope as reserves. Firing positions are stationed vertically as well as in depth. When in contact, the OPFOR reverse-slope defense may be necessary. (See Figure 17-1.)

In a defense organized along a mountain ridge, the forward edge of the defense usually lies along the forward-slope facing the enemy and descends as close as possible to the bottom of the ridge. Small elements or combat outposts defend any spurs that radiate from the high ground in the direction of the enemy. Sometimes the OPFOR moves the forward edge of the defense closer to the ridge. This occurs if the slopes are not too steep, making it possible to organize a better defensive fire system.

Valleys

When defending a wide mountain valley, the OPFOR establishes strongpoints on high ground and on spurs of mountain ranges fringing the valley. In the valley, the emplacement of obstacles and the organization of antitank defenses receive emphasis. The OPFOR uses tanks in addition to the artillery and antitank weapons to reinforce their defensive positions.

When defending narrow mountain valleys, the main effort concentrates on the retention of commanding elevations. Company and platoon strongpoints usually locate on these heights. Usually only a small portion of the forces occupies defensive positions in the valley. Their arms consist primarily of machineguns and antitank weapons. The OPFOR always place obstacles and ambushes throughout the valleys. Fires cover all approaches to higher elevations.ment of obstacles and the organization of antitank defenses receive emphasis. The OPFOR uses tanks in addition to the artillery and antitank weapons to reinforce its defensive positions.

TOPOGRAPHICAL CREST

FORWARD MILITARY CREST

REVERSE MILITARY CREST

FORWARD SLOPE

REVERSE SLOPE

COUNTER SLOPE *

ENEMY

* Also known as the reverse forward slope
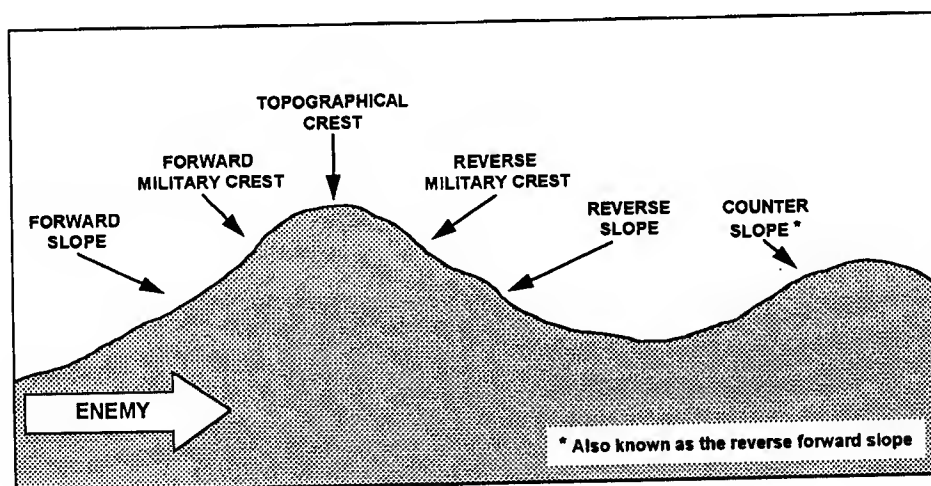
Figure 17-1. Forward and reserve slope defenses.

Gorges

The OPFOR defends a gorge in basically the same manner it defends a valley. The high ground forming the entrance into the gorge requires a special effort to secure. Defenders prepare strongpoints with a multilevel system of fires along these heights. The narrowness of the frontage in this case requires echeloning the defense in depth. The flanks of the defending force tie the most difficult segments of available terrain into the defense. Antitank weapons, locating primarily from ambush, deploy into the gorge itself.

Wooded Areas

In wooded terrain, defensive positions locate at the forward edge of the woods or on commanding heights. Machineguns and observation posts position on platforms built in the trees. The OPFOR widely employs antitank and antipersonnel mines, artificial landslides, and other obstacles.

Tactics

In mountainous terrain, battalions establish their defenses on broader frontages than on regular terrain, intersecting the most easily accessible axes of enemy advance. The OPFOR defends plateaus and wide valleys the same way it defends under normal conditions. It locates strongpoints on commanding heights and passes, road junctions, and other key terrain features. Strongpoints provide all-around defense and mutual fire support. The chief of artillery plans and integrates artillery fires to ensure multitiered fire coverage. If a sector is either difficult to access or to cover by observation and fire, the OPFOR defends it with--

- Ambushes.
- Obstacles.
- Reconnaissance patrols.
- Artillery.
- A combination of these.

Tank avenues of approach receive emphasis. Tanks, antitank guns, and ATGMs locate in company strongpoints that are defending road junctions, exits from valleys, defiles, edges of forests, and mountain river crossings. Their firing positions enable them to hit the enemy at maximum range. Their weapons hit the attacking enemy force as it reaches the distant approaches. Defenders repel enemy attacks by using all fire resources. Tanks and other armored targets receive fire as they negotiate gradients, particularly on hairpin turns which reduces their speed.

Counterattack

A battalion launches a counterattack to eliminate an enemy force that has penetrated the defense. The counterattack starts from higher elevations along the slopes of mountains, valleys, and ridges, supported by artillery fire. Terrain and equipment permitting, brigades and divisions maintain strong, tank-heavy counterattack forces as reserves. Battalions and companies maintain smaller reserves.

Natural obstacles in mountainous terrain generally permit rapid organization of a defense with relatively small forces. Maximum use is made of the terrain, minefields, and obstacles. Organic and supporting fires, cover the gaps between strongpoints.

Withdrawals

In the past, the OPFOR has used a reverse wedge formation in withdrawals and will probably use this type of formation in the future if the terrain and enemy situation warrant it. Units withdraw to high ground and allow the enemy to enter the open end of the wedge On signal they envelop the attacking column and close the wedge.

COMMAND AND CONTROL

To ensure uninterrupted control over units, command observation posts (COPs) must locate at a point that allows the commander to see most of the defensive formations, the opposing force, and the flanks of neighboring units. It establishes communications with the rear. It usually locates on one of the dominating heights.

OPFOR command elements locate as near as possible to the troops, nearer than they would be on flat terrain. Command elements normally deploy in depth and disperse over the whole frontage . They normally deploy on the major axis of advance. For example, brigade or division main command posts may be as close as 3 km from the forward edge. Division command posts expect to move daily while forward COPs move every 2 hours.

Commanders control their brigades and battalions from COPs. These move when required, allowing the commander to observe the battle and control the troops. Commanders at brigade and lower usually remain at their COPs to keep abreast of rapidly changing combat conditions. They move forward to new COPs immediately after the seizure of crests and spurs that previously obstructed observation.

Since mountainous terrain restricts line-of-sight communications such as FM and multichannel radio, the OPFOR makes extensive use of relay and retransmission sites. However, siting communications facilities on high ground has its own problems. These include--
- Difficulties in establishing the sites.
- Loss of communication mobility.
- The increased likelihood of locations being predicted or discovered, and destroyed.

Mountain warfare requires additional radios as well as numerous retransmission sites. Whenever possible, however, the OPFOR uses wire. In mountainous areas, the effort to install and maintain wire is greater than normal, especially in deep snow and extreme cold. Reliability of radio communications increases with--
- Special training.
- Careful selection of frequencies.
- Location of radios.
- Adjustment of antennas.
- Retransmissions.

RECONNAISSANCE

Mountains offer distinct advantages as well as disadvantages for reconnaissance; these include--
- Long-range surveillance.
- Securable defiles.
- Weather conditions that favor the ambusher.
- Limited roads that hinder reconnaissance ability.
- Numerous obstacles that limit movement.

The reconnaissance force may range in size from team of scouts, to a reinforced company, to a battalion. The OPFOR may augment the reconnaissance force with:
- Tanks.
- Artillery.
- Armored vehicles.
- Engineers.
- Chemical personnel.

A large reconnaissance force normally operates up to one day's march forward from the remainder of the forces.

Forests, hilltops, defiles, and ravines impose severe restrictions on mountains reconnaissance. When traversing roads or open spaces, personnel should make visual contact with the enemy, whereas only audible contact is necessary in thicker vegetation. The reconnaissance force (if large enough) ambushes any

enemy force it encounters in forested areas; it captures, rather than fires on, smaller enemy groups. Relief also imposes restrictions on mountain reconnaissance. Scouts search cross-compartmented hilltops before the reconnaissance force advances. For corridor-type hilltops, the scouts conduct a search along the slopes of the hills as they advance ahead of the main force.

When conducting reconnaissance of defiles and ravines, the reconnaissance main force positions itself at the entrance of the valley while the scouts conduct a thorough search of the valley and hilltops. The scouts should occupy a point on a hill that provides a clear view and fields of fire far into the valley. After the main force receives a signal from the reconnaissance element, it moves along one side of the valley. The OPFOR increases its reconnaissance effort to avoid enemy antitank ambushes.

TANKS

In the mountains, the OPFOR uses tanks as mobile armored artillery or in the double envelopment role. The tank holds the defending force while the infantry troops envelope on both sides. Mountainous terrain restricts tank use to roads and ridges. Tanks are vulnerable to mines and plunging fire in narrow defiles and may be unable to elevate their main guns sufficiently to engage targets above them. In narrow defiles, a single knocked-out tank is likely to block the entire defile.

The OPFOR uses tanks extensively in groups of two or three to reinforce an enveloping detachment consisting of an infantry platoon, a squad of engineers, and an antitank platoon. In support of night attacks, tanks approach the objective under the cover of darkness and deliver fire during the assault. Whenever possible, OPFOR tanks occupy positions during daylight that permit them to move di-

rectly into the attack. The OPFOR may allocate elements of a tank battalion to mechanized and motorized infantry battalions. OPFOR commanders attempt to get their tanks into areas where the enemy would not expect them. In the defense the OPFOR may employ tanks forward in infantry strongpoints.

The use of tanks in the mountains also poses special problems with regard to maintenance and logistics. Tanks throw tracks more frequently, wear out clutches quicker, and overheat more often. Tanks operating in the mountains need 30 to 50 percent more fuel and additional coolant. During mountain warfare, tanks may double their march formation intervals.

Tanks may precede infantry but more often support ground attacks by fire. The commander may attach tanks down to what would normally be very low levels, with one tank per infantry platoon if possible. The commander may issue troops special clothing and rations.

Marksmanship and gunnery pose several problems in the mountains; for example, firing uphill, downhill, and on the slant. This is particularly important for direct fire weapons (tank and antitank), since accuracy is so dependent on flat-trajectory firing.

ARTILLERY

The OPFOR frequently decentralizes fire support to support maneuver forces on independent axes. It fires its artillery by batteries or even platoons. Artillery and mortars locate forward, with the flat-trajectory weapons on the flanks. This positioning supports extended and uneven frontages and covers gaps and dead space. Artillery uses direct fire at maximum range as often as possible. The OPFOR may employ its multiple rocket launchers as individual fire units.

In attacking positions of different elevations, the artillery officer directs fire to neutralize all positions simultaneously. He takes particular care to neutralize strongpoints blocking the axis of attack. As the attack progresses upward, fires shift to stay in front of attacking troops while bringing continuous fire on the remainding positions.

OPFOR mortars normally deploy on the reverse slopes of hills about 10 meters from the crest. This emplacement affords them several advantages. The forward observer is within speaking distance of the mortar crews. By placing himself on the mortar-target axis, he can make computations for deflection simple, when determining initial fire data. The positions afford the mortar crew protection from hostile flat-trajectory fire.

Mountainous terrain restricts the movement and deployment of fire support equipment. Firing positions are normally immediately adjacent to available roads. Helicopters can emplace mortars and artillery. Some equipment necessary to successful mountain fighting is not normally organic to OPFOR units. This equipment may be older and therefore very easy to acquire if the commander had anticipated mountain warfare. The OPFOR may employ 160-mm mortars instead of the 122-mm howitzer, because of the mortar's higher angle of fire and greater mobility due to decreased weight. The 76-mm mountain gun, is an outstanding mountain artillery piece. Vehicles or animals can tow this weapon, or artillerymen can break it down into several loads for pack animals.

Some other artillery equipment particularly suited for mountain warfare is the 122-mm single-tube rocket launcher, the 60-mm light mortar, and the 120-mm mortar or 82-mm mortar. The 73-mm recoilless gun is also ideal for mountain combat.

Some considerations in the employment of artillery in the mountains are--
- Variations in atmospheric pressures and temperatures complicate adjusting fire.
- Dead space and terrain masking limit fields of fire.
- Insufficient time for complete preparation of firing data may limit accuracy. Artillery may have to rely instead on the "meteorological mean."
- Dead space, terrain masking, shielding of sound and electromagnetic waves, and multiple reflection of echoes limit sound and radar ranging.

HELICOPTER EMPLOYMENT

In the mountains, the OPFOR may use helicopters for the following missions:
- Reconnaissance.
- Command and control.
- Resupply.
- Air defense.
- Evacuation.
- Artillery adjustment.
- Close air support.
- Troop transport.

Mountainous terrain degrades ground-to-air communication, and evasive flight techniques are necessary to avoid radar and visual detection. This flight method often degrades FM transmissions and reinforces the requirement for radio relay or retransmission sites.

Weather Effects

Mountain weather tends to change rapidly and severely. Fog, frontal systems, wind, icing, and storms can easily disrupt or delay helicopter activities. Changes in temperature, relative humidity, and air pressure, affect lift capability. Increases in any of these factors plus higher altitudes mean a decrease in lift capability. For a given load, the helicopter requires extra power, which uses more fuel and increases engine strain.

Mountain winds are almost impossible to predict. On the windward side of mountains, air flow normally is steady. On the leeward side, winds are turbulent, with strong vertical currents. Turbulence, even from moderate winds (10 to 12 knots), can seriously hamper helicopter operations. Aircrews thus require special training to minimize the hazards of strong winds. Turbulence may preclude helicopter usage or require that helicopters be flown at greater altitudes, increasing the risk of detection and enemy fire.

Besides limited visibility, low clouds and fog may cause helicopters to ice up. Ice on rotor blades results in significant loss of lift. Since ice does not break off rotor blades uniformly, severe rotor blade imbalance can occur.

Tactics

Mountain terrain complicates flight route selection. Routes may not always be the most direct nor provide the best cover and concealment. These factors increase the amount of time necessary for a helicopter flight and increase the chance of enemy observation and fire. Greater intervals between aircraft also mean an additional navigational load on each air crew and may reduce mutual support. Mountain flying puts a greater strain on helicopter crews, tiring them faster than usual.

The OPFOR controls close air support less rigidly in mountains than over flat battlefields. Roving search-and-destroy missions are more common particularly on the reverse slopes.

Helicopter target priorities are--
- Enemy strongpoints on the axis of advance.
- Mortars, antitank weapons, and artillery threatening the advance.
- Counterattack forces and reserves.
- Targets on the reverse slopes screened from attacking ground forces.

ENGINEER SUPPORT

Engineer support in the mountains requires a greater than normal range of assets and is more extensive and difficult to perform than over more normal terrain. For example--
- Mountain roads and trails may require extensive construction, improvement, maintenance, and repair to withstand military traffic and severe weather conditions.
- Landing strips and helipads are more difficult to clear.
- Preparation of cold weather shelters is necessary.
- Construction in the mountains requires more time, especially if working in rock.
- Materials may be difficult to obtain in the mountains, adding to the logistics burden.

The OPFOR reinforces engineer units involved in mountainous combat more heavily than comparable engineer elements in normal combat conditions. They can therefore accomplish a larger volume of work. Objectives may not be as deep for units at battalion level and below as they would be under normal conditions. In mountainous areas, the OPFOR expects to achieve only one-third the normal rate of advance. However, depending on the circumstances, the rate of advance may be higher than the expected one-third rate.

Combat engineers reinforce units attacking independently as well as to enveloping detachments and heliborne assault forces. An infantry battalion employed as an enveloping detachment receives one or two engineer platoons. An infantry company with a similar mission receives one or two engineer squads. These engineers support reconnaissance, obstacle clearance, and water and dry gap crossing.

LOGISTICS

Mountainous terrain severely handicaps all logistics functions. Road networks normally are few and in poor condition and require extensive engineer support. Supply routes are major targets, and mountains afford excellent opportunities for ambushes and attacks. The combined problems of terrain, cold, ice, and dampness make rapid and reliable communications extremely difficult in the mountains.

Some logistics considerations for mountainous combat are--

- Rations. Caloric requirement increases due to more strenuous activity.
- Fuel. Limited road nets and steep slopes reduce the number of vehicles operating in the mountains. The vehicles and aircraft use more fuel.
- Ammunition. Indirect fire expenditures increase, largely because of difficulty in adjusting fire on steep slopes and because of the decreased bursting radius caused by firing in snow or forested areas.
- Explosives. Quantities of explosives used in obstacle reduction may increase as much as tenfold.
- Spare parts. High-consumption-rate spare parts include tires, tracks and pads, brake shoes, and transmissions.
- Animals. Use of animals as transports.

AIR DEFENSE

In the mountains, air defense is more difficult because of problems in maintaining unit integrity of both maneuver and air defense elements. Comprehensive air surveillance and air defense fire support are more difficult. Air defense units conduct their missions under a greater than normal degree of decentralization. This affects fire control down to AA gun section level. This greatly increases the importance of shoulder-fired SAMs, as it does the antiaircraft role of small arms.

Mobile air defense systems may be unable to accompany maneuver elements. Instead they move from high point to high point along the best available routes of advance. This way they obtain the best radar coverage, observation, and fields of fire.

CHEMICAL AND BIOLOGICAL EFFECTS

Changing weather conditions and constant winds in the mountains significantly reduce the effects of chemical and biological agents. Terrain and winds hamper accurate prediction of downwind toxic agent travel. Cool daytime temperatures slow the evaporation process, permitting a contamination hazard to remain longer, while higher humidity increases effectiveness. However, mountain winds may nullify this feature by creating a more rapid natural decontamination.

Mountain winds and atmospheric conditions enhance downwind coverage of chemical and biological agents. Snow deposited on top of a contaminated area can increase the hazard's duration. Sunlight, degrades the effectiveness of most chemical and biological agents. Employment above the timberline, or higher altitudes, reduces the effectiveness of chemical and biological agents.

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OPFOR leaders have long recognized the potential for conflicts in the desert regions. They feel the key to success in desert combat is mobility. Hitting hard and fast achieves victory. Adapting to the desert environment, its terrain, and climate will determine if a battle is successful. The OPFOR adapts its tactics and equipment to this hard terrain where temperatures range from freezing in the evening hours to extreme heat during the days.

From the OPFOR perspective, the biggest influence on the execution of tactical movement is terrain. Desert combat can be highly mobile. Commanders attempt to maximize opportunities for speed by grouping vehicles of similar cross-country capabilities together. They place vehicles with limited or slower mobility in the front of the columns. A combination of engineer and chemical vehicles leads the columns to provide commanders with quick access to clearing of roads and decontamination teams.

ENVIRONMENT

Deserts are arid, dry regions with the limited ability to sustain life due to the scarcity of water where rainfalls vary from 0 to 10 inches annually. Common characteristics of this environment are--
- Rocky or sandy soil.
- Poorly developed road networks and small populations.
- Less than 10 percent natural masking by relief, with up to 75 percent of a given area observable from heights.
- Limited landmarks for orientation and navigation.

- Limited or no available water.
- Extreme and sudden changes in temperature.
- Strong winds and sand storms resulting in decreased visibility, degraded communications, and increased maintenance problems.

This environment can greatly affect military activities, visibility, navigation, and particularly orientation. Some factors that influence the movement rates are visibility, driver proficiency, route marking, and increased maintenance stops. Desert warfare is often a battle for control over the lines of communication. Whichever side can protect its own lines of communication while interdicting those of the enemy will prevail.

Defiles, narrow gorges, or passes that prevent easy passage, causing marches to be limited to single file, also play an important role when used to the OPFORs advantage.

Mountain Deserts

Mountain deserts consist mainly of mountains or hills lacking vegetation, with flat, dry basins separating them. Although limited, high ground ranges from a gradual slope to steep inclines rising several thousand feet above sea level. The majority of rainfall occurs in the higher ground areas and rushes down to the lower levels in forms of flash floods. Erosion plays a key factor and creates wadies, gorges and ravines. Water evaporates quickly and leaves the area as quickly as it came. If enough rainfall occurs, small lakes or ponds can form, although they are short-lived.

Rocky Plateau Deserts

Rocky plateau deserts are large, flat areas of hard packed soil or rock. Narrow valleys, gulches, and canyons are present and can be wet or dry areas. The flat bottoms of these valleys and canyons appear to be sufficient assembly areas, but can prove to be extremely dangerous due to flash flooding. This terrain also canalizes personnel and equipment and leaves little room for maneuver.

Dunes or Sandy Desert

Dunes or sandy desert consists of extensive flat areas of sand or gravel broken by sand dunes. Trafficability depends on the slopes of the dunes and the sand make-up and texture. Vegetation may be scarce, none at all, or trees and scrubs up to two meters high.

Trafficability

Desert terrain normally consists of sand and rocky soil with few or poor road networks. The lack of developed roads can force units onto open terrain. Loose, dry, sandy soil may hinder cross-country movements. When wet, the soil may compact and provide fair to good movement opportunities. Saline soil is rock hard when dry, but difficult to negotiate when wet. Moving sands create the most difficult movement conditions, as it limits traction (even on foot).

Road surfaces mixed with oil or other compounds can supplement road networks. Movement speeds depend on the texture of the surface and the widths and thickness of the road surface. Mountainous terrain can restrict travel and the enemy and climatic conditions can quickly close or block off the few passable areas.

Wadies or dried up stream beds can provide passable routes and provide cover and camouflage from air reconnaissance and ground observation. Even when it is not raining in the present area, there is danger of flash flooding from the higher mountains after heavy rains.

Salt marshes are impassable for wheeled and track vehicles when wet. Dry marshes can provide adequate support for light vehicles only. Marsh mud laid on top of sand can provide a good road surface. Reconnaissance and marking are critical in these areas to keep units from becoming combat ineffective.

Restrictions to movement determine which parts of the desert become key terrain. When the desert surface can not support wheeled traffic, those few roads and desert routes can become key terrain. The general flatness of the desert makes covert movements difficult. About 75 percent of a given area is observable from higher positions, placing a greater emphasis on controlling the higher ground.

Climate

High temperatures can reach 136 degrees Fahrenheit (58 degrees Celsius). Internal tank and vehicle temperatures can reach 160 degrees Fahrenheit (71 degrees Celsius). Low temperatures can fall below minus 30 degrees Fahrenheit (minus 40 degrees Celsius). Strong winds adding high wind chill factors can increase the effects of low temperatures. The lack of vegetation and clear skies allow the ground to heat during daylight hours and cool to near freezing in the evening.

Winds in the desert can reach hurricane force (up to 152 knots). When mixed with sand and dust, they are almost unbearable.

These conditions add to the problems of increased maintenance and can severely hamper visibility and navigation. Personnel can become disoriented or separated from their units. In the absence of winds, troops and their vehicles can create clouds of sand and dust. These clouds can drift for several hundreds of meters not only making movement more difficult, but also presenting a large visual signature to the enemy.

Water

The most important concern in the desert is the lack of water. Populations will depend on and located them near water sources. Rainfall in the desert varies from day to day. The dry arid lands of the desert quickly soak up rainfall and collection efforts are difficult. Flash floods occur when the saturated ground can no longer hold the water content.

With the onset of rains, commanders should relocate personnel and vehicles to high ground to avoid flash flooding. Water is a valuable resource. Control of a natural water source is both tactically and strategically important.

MARCH

Most of the desert consists of loose, moving sand dunes or poorly stabilized sands that are difficult to negotiate in the dry time of year. Strong winds blowing sand and dust require intensive and frequent maintenance to keep equipment and weapons serviceable. Sand and dust penetrate the smallest openings of weapons and vehicles, affecting the operation of equipment and leading to increased wear and maintenance problems. Lack of water is normal in the desert. The OPFOR purifies available water before using.

In the desert, the lack of traction may slow vehicle movement. As a result, the odometer readings may exceed the distance actually traveled by 10 to 15 percent. These conditions require a more thorough preparation of vehicles and equipment.

In column formations, the standard interval between vehicles is between 25 to 50 meters. When the threat of enemy high-precision weapons exist, commanders increase vehicle intervals to between 100 and 150 meters.

When preparing for a march, the OPFOR equips its vehicles with special devices to increase off-road capability. It establishes extra stores of water, fuel and food in units. Soldiers prepare their weapons for use in very dusty conditions.

The OPFOR uses natural vegetation and cover whenever possible to conceal column movement. When a column moves in very dusty conditions, commanders increase the interval between vehicles, and turn on clearance lights. Trailing columns travel at the edges of the dust cloud from preceding columns.

Commanders study the movement routes and the conditions of trafficability in their sectors in great detail. They assign azimuths and directions of movement and determine the markings required for routes. They determine likely avenues of approach, and security measures for the flanks and rear of the columns. Drivers and mechanics perform prebattle preparation of vehicles and weapons in order to increase the survivability of equipment during the fast movement, of the desert battlefield. (See Figure 18-1)

Terrain Characteristics	Average Rates of March	
	Day	Night
Sandy hills, loose sand, shale	7 to 8 km/hr	5 to 6 km/hr
Sandy valleys	10 to 12 km/hr	8 to 10 km/hr
Clay-surfaced desert	24 to 26 km/hr	22 to 24 km/hr

Figure 18-1. Desert rates of march.

During the march in limited visibility conditions, commanders slow the vehicles and increase vehicle intervals to 100 to 150 meters for traffic safety. When sand and heavy dust storms are present, tanks move behind or on the leeward side of wheeled vehicles. Should conditions become severe, commanders may temporarily halt the columns until the conditions improve.

Although the OPFOR fits many of its vehicles with efficient land navigation systems, navigation can still be difficult in the desert. The OPFOR spreads its columns out, laterally as well as in depth, because of the problems of soil trafficability and the potential air threat. With the open nature of the desert, reconnaissance and flank and rear security become critically important. Commanders use the cover of darkness and bad weather whenever possible to conceal movement.

RECONNAISSANCE

Features of desert areas, the nature of troop combat, and heavy demand for logistics support in desert areas place a number of additional requirements on reconnaissance. In addition to usual missions, reconnaissance tries to determine--

- The degree of outfitting and training of enemy troops for desert operations.
- Alignment of enemy troop combat formations and degree of engineer preparation of positions.
- The presence and capacity of water sources in the enemy dispositions.

- The presence and capacity of pipelines.
- Convenient bypass routes to deliver strikes against the enemy from flanks and rear.

The specific nature of preparation and training of personnel assigned to reconnaissance and their logistics support is of decisive importance in performing reconnaissance missions in desert areas.

Observation

Desert conditions may make reconnaissance by observation easier or more difficult. The open terrain and the lack of camouflaging features contributes to observation and detection of objects on the battlefield. At the same time, the absence of elevations for stationing observers and observation posts restricts observation ranges. The range of visibility decreases during windy conditions and increased temperatures. To increase observation ranges, reconnaissance forces may use specially made prefabricated or mechanical observation towers on vehicles with good off-road capability.

The OPFOR moves its observers and observation posts up to the forward edge at night and returns them to their units' position before dawn.

In the desert, reconnaissance troops commonly use enemy engineer works and obstacles as reference points. They may also use special artillery and mortar rounds to establish artificial reference points.

Patrols, Raids, and Ambushes

Reconnaissance troops usually conduct patrols, raids, and ambushes. These may occur at night, at dawn, or in the period of brief evening twilight when the temperatures drop and the chances of being observed decrease.

Reconnaissance during the day is risky for reconnaissance troops, leaving them vulnerable due to the open terrain, and the dust raised when moving. These conditions hinder the forward movement of patrols. Reconnaissance often involves subjecting the patrols to the desert heat for extended periods of time.

Reconnaissance patrols, raids, and reconnaissance ambushes are possible during the day. The OPFOR generally restricts daytime patrols to the fall-winter period, when the air temperature fluctuates from 25 to 30 degrees Celsius and the soil surface is not as hot as in summer months. The OPFOR organizes fire support for raids and ambushes to annihilate or neutralize targets situated near the patrols' objective.

The success of reconnaissance patrols depends largely on the--
- Correct choice of march formation and weapons.
- Supply of fuel and water.
- Conformity of combat equipment painting to the color range of the area.

During heavy dust or limited visibility, the number of patrols deployed for reconnaissance increases and their distance from friendly troops decreases.

Engineer Reconnaissance

Reconnaissance is an essential mission for the combat engineer. To allow the commander and his staff to plan properly, the engineer must accurately see the battlefield. The two basic types of engineer reconnaissance missions are tactical and technical. Tactical reconnaissance collects specific information on enemy targets, routes, and axes, and supports maneuver planning. Technical reconnaissance collects specific engineer data and may only involve engineer assets.

OFFENSE

The shortage of trafficable roads and the difficulty of hiding movement complicates the offense in deserts. The enemy disperses his defenses over a wide area and finds it difficult to link them in a continuous line. This creates opportunities for infiltration and maneuver that the OPFOR can exploit.

The OPFOR attacks--
- From the march, when possible.
- Along broad frontages and scattered axes.
- Cross-country, off any given road network.

The absence of continuous enemy defenses and the possibilities of wide maneuver makes it favorable for commanders to deliver strikes against the enemy's rear and flanks.

The commander--
- Gives the azimuth for the direction of attack.
- Provides the procedures for marking the route when moving to the line of departure.
- Designates several machine-guns to fire against low flying enemy aircraft, helicopters and other airborne targets.
- Takes steps to prepare weapons and equipment for use during sandstorms.
- Issues equipment to increase off-road capability of wheeled vehicles.
- Issues instructions to prevent heat Strokes, provide personnel with a store of water (he supervises its consumption), and to maintain sanitary, hygienic conditions.

Frontages

The OPFOR assigns zones of advance that are wider than usual to units in the desert. The units may advance in two echelons or one echelon with a reserve. Substantial distances between echelons are acceptable. The OPFOR often decentralizes combat support assets under desert conditions. It expects brigades and battalions to act independently and reinforces them accordingly. If the forces are available, it prefers a combined arms battle because of the increased effectiveness of enemy antitank weapons and air power.

Objectives and Missions

Key terrain is limited but becomes vital to the desert battlefield. Commanders concentrate their efforts on developed roads, track junctions, airfields, sources of water, and any other significant geographical features.

Attack from the March

The OPFOR executes attacks in the desert from the march. Deployment into pre-battle and battle formation takes place earlier than usual, since the terrain offers little cover from long-range ATGMs. In any event, transitioning to prebattle formation takes place outside the range of the enemy's direct fire weapons. Company prebattle formations are dismounted platoon columns for motorized units. The OPFOR avoids frontal attacks and uses smoke to conceal both approach marches and assaults.

Deep Battle

Desert warfare creates excellent conditions for rapidly carrying the battle into the enemy rear. The OPFOR uses raiding, airborne and heliborne assaults for this purpose.

Battalion and Company

Battalion and company missions may be to act as part of the main body, or independently as an enveloping or raiding detachment. When a battalion or company is going to fight on an independent axis, it widens its attack frontage and plans to attack to greater depths than if it were part of the main body.

Enveloping detachment missions can be to--

- Coordinate with units attacking from the front in enveloping and destroying the enemy.
- Disorganize the enemy rear, capture oases, road junctions, water sources and other important terrain.
- Destroy means of nuclear and chemical attack, and command and control (C^2) facilities.

To increase independence in performing missions, the OPFOR reinforces battalions with companies of other combat arms and special troops. It also--

- Conducts intensified reconnaissance.
- Forms the battle formation in an echelon right or left.
- Assigns weapons to cover the flanks.
- Places the second echelon (reserve) behind the exposed flank.

Companies and battalions launch their assault after preparatory fires trying to neutralize strongpoints, C^2 facilities, and individual defensive positions. They use assigned tanks, artillery, and antitank guided missiles for destroying and neutralizing enemy weapons and positions during the assault.

Battalions and companies fight into the enemy depths in order to--

- Provide a deep and close envelopment.
- Attack the exposed rear and flanks.

- Break up and disperse the enemy.
- Reach their prescribed objective.

During an attack, the senior medical officer positions the medical aid stations close to the first-echelon unit. The logistics officer repositions the logistic support points closer to the battalion battle formation, especially when it attacks on a separate axis.

Platoon and Below

A platoon uses gaps and exposed flanks in the enemy defense to swiftly move forward into the depth and to assault strongpoints from the rear. During the attack, the platoon commander pays special attention to maintaining the direction and tempo.

Fire preparation to neutralize strongpoints, individual defensive positions and C^2 facilities precede assaults. The OPFOR uses direct fire of artillery and tanks (when available) in the fire preparation period. Under ordinary conditions, a platoon or squad, assault in dismounted formation. When the dismounted forces penetrate the enemy defense and overrun the first-echelon enemy platoons, the platoon continues the attack into the depth. During an attack, the platoon is constantly ready to destroy low-flying enemy aircraft or helicopters.

A platoon can also act as an **enveloping detachment**. Making determined use of gaps and exposed flanks in the enemy combat formation, it can--
- Penetrate into the enemy's depth.
- Capture the designated objective independently or in coordination with an airborne assault force.
- Hold the objective until the approach of the main body.

When the enemy conducts a **counterattack** with superior forces, the platoon takes up a tactically favorable line, inflicts as much damage as it can, and continues the attack.

If the platoon commander detects an enemy withdrawal, he immediately shifts to the pursuit. The pursuit occurs along parallel routes, splitting retreating enemy units into small groups and destroying them in succession.

DEFENSE

The OPFOR sees desert defense as dynamic and not position-oriented. It places heavy reliance on counterattacks and groupings to destroy the enemy. As such, the commander assigns wider defensive sectors than he normally would.

The desert offers mixed terrain, with areas capable of supporting high rates of movement intermixed with soft sand and dunes that hinder or prevent movement. The improvement of maneuver routes is a vital engineer task in desert warfare.

Organization for Combat

The OPFOR covers the most likely axes of approach with battalion and company positions, set up for all around defense, and places greater distance intervals between them. Patrols, obstacles, and contaminated areas hinder rapid advances in areas of poor trafficability or minor sectors. The OPFOR maintains a reserve or strong second echelon to counterattack or reinforce threatened sectors. It organizes its fire plan to engage tanks and other armored targets at maximum ranges using howitzers in the direct fire role to supplement its antitank capability.

The OPFOR prepares positions to maintain themselves for sustained periods of time without resupply. It establishes reserves of ammunition, potable water, food and fuel in the platoon.

Engineer Work

Improving defensive positions is more difficult in deserts. Soft sand needs reinforcement and there is generally a shortage of local material to use in preparing defenses. Laying mines is difficult in many sectors. The OPFOR regularly inspects its minefields to ensure that the wind has not exposed the mines. Because of the difficulties in concealment, the OPFOR builds many dummy defenses to deceive the enemy.

Counterattacks

In the desert defense, the OPFOR keeps a strong reserve. The reserve is tank-heavy whenever possible. It deploys the reserve to defeat the attacking enemy enveloping or infiltrating detachments in meeting battles, or to counterattack successful enemy groupings.

CAMOUFLAGE

The lack of vegetation and the open, flat terrain of the desert affords little natural concealment and even less natural vegetation for camouflage. Forces are particularly vulnerable to observation, especially from aircraft, radar, and heat detection. As a result, camouflage is even more important, but is also much more difficult to accomplish. The OPFOR attempts to overcome these obstacles by--

- Increasing the use of dummy positions and equipment.
- Constructing and using artificial nets and screens.
- Using camouflage paint to blend in with the local background and break up outlines.

HELICOPTERS

The desert hinders helicopter employment by--

- Increased maintenance requirements.
- Lack of cover and concealment.
- Low air density.
- Requirement for higher degree of pilot training required.
- Low-level navigation more difficult because of fewer reference points.

LOGISTICS

Desert warfare considerably increases the strain on the logistics system. The demand for fuel, spares, and water increases, as do maintenance requirements. The increased gaps between units also make the logistics task more difficult. The limited number of areas that offer concealment increases the chances that the enemy can detect and frequently attack the logistics elements.

NBC EFFECTS

Desert terrain affects the behavior and influences the deployment of nuclear, biological, and chemical weapons. Air instability (a result of temperature variations at various levels of the air) greatly affects all chemical agents. The air is more stable and more suitable for NBC employment during the cool of desert night than during the heat of the afternoon. During periods of hot, dry temperatures, the instability of the air may cause rapid and irregular dissipation of chemical or radioactive clouds.

High desert winds may affect the distribution patterns of chemical and nuclear clouds as well as dissipate their effects. High desert temperature kill most biological agents.

Nuclear Weapons

The use of nuclear weapons results in considerable dust clouds that remain in upper air levels for many hours. As temperatures decrease and air density changes, it enables nuclear blast waves to move faster. Nuclear blasts, even from air bursts, raise considerable quantities of sand and dirt that inhibit observation and maneuver. This effect and the atmospheric disturbance caused, are particular threats to helicopters.

Nuclear radiation patterns vary widely depending on weapon yield, wind, and the magnesium, sodium, salt, and silicon content of the terrain. Thermal radiation effects are greater than normal since there is usually less terrain masking in the desert.

Chemical Weapons

High desert temperatures increase the incapacitating effects of liquid agents close to the target. Air instability, wind, and faster evaporation rates cause most chemical agents to dissipate relatively quickly and irregularly.

The high temperatures seriously degrades the efficiency of personnel wearing full protective clothing, even if it is only for brief periods of time. Soldiers can only wear individual protective clothing for short periods without risking heat injuries and dehydration. The wearing of individual protective clothing also results in less efficient physical activity. Rest breaks become more important, and water consumption increases. Greater levels of perspiration may increase the effectiveness of some chemical agents.

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This chapter uses the term *forest* to include all densely forested areas, for example, forests, grasslands, jungles, and swamps. The forest, especially in mountainous terrain, has a leveling effect on the relative capabilities of opponents, since it sharply limits the employment of armor, heavy artillery, and vehicles and also restricts aerial observation. Under such conditions, the OPFOR makes extensive use of--

- Natural cover.
- Infiltration.
- Ambushes.
- Raids.
- Deception.
- Speed of movement.
- Continuous reconnaissance.
- Well-coordinated planning.

Forest conditions make it difficult to use large units and also complicate commanders' control over their own and subordinate units.

ENVIRONMENT

Forests cover thirty percent of the world's landmass. There are two basic types of forests: tropical rain forests, and deciduous.

Tropical Rain Forests

Jungles are tropical rain forests. They consist mostly of large trees whose branches spread and lock together to form canopies. These canopies, which can exist at two or three different levels, may form as low as 10 meters from the ground. Multiple canopies prevent sunlight from reaching the ground, causing a lack of undergrowth on the jungle floor. Extensive above-ground root systems and hanging vines are common. These condi-

tions, combined with a wet and soggy surface, make vehicular traffic difficult. Foot movement is easier in tropical rain forests than in other types of forest. Except where felled trees or construction make a gap in the canopy of the rain forest, air observation is nearly impossible with the naked eye. Ground observation limitation is generally about 50 meters (55 yards).

Deciduous Forests

Semitropical zones that have both wet and dry seasons contain most of the world's deciduous forests. In the wet season, trees are full with leaves; in the dry season, much of the foliage dies. Trees are usually less dense in deciduous forests than in rain forests. This allows more rain and sunlight to filter to the ground, producing thick undergrowth. In the wet season, with the trees in full leaf, air and ground observation decreases. Movement is more difficult than in the rain forest. In the dry season, both observation and trafficability improve.

Characteristics

The OPFOR characterizes fighting in forested and swampy terrain by the following factors:

- Difficulties in observation, orientation and the adjustment of artillery fire.
- The complexity of command and control (C^2).
- Difficulty in using antitank wire-guided missiles (ATGMs).
- Abundance of natural obstacles, easily and quickly improved.
- The possibility of forest fires.

PRINCIPLES

When fighting in forests commanders apply the following principles:

- Maintain the offensive; defend only to gain time. The OPFOR defense is a temporary measure, adopted only when necessary. This does not imply, however, that the OPFOR defense consists of half measures or that it is unskilled in defense techniques. It carefully and cleverly prepares it defenses.
- Embrace the enemy; stay close to reduce the effects of enemy firepower.
- Infiltrate at every opportunity.
- Fighting during periods of limited visibility.
- Use surprise tactics: raids, ambushes, and patrols.
- Use of camouflage, obstacles, mines, boobytraps, and survival measures (bunkers and tunnels) extensively.
- Remove intelligence indicators from the battlefield. The OPFOR goes to great lengths to leave little or no information relating to its intentions, order of battle, strength, or unit dispositions.

MARCH

The organization of the march column is important in thick woods, because it is usually very difficult to implement changes during the course of combat. Movement is generally on poor roads with limited opportunity for detours. There is great likelihood of blockage, due either to enemy action or to vehicle breakdown. Flank security, assisted by mobile obstacle detachments, attempts to block enemy counterattacks from the flanks.

Platoons and companies use available roads and trails. The roads and trails may have considerable distance between them. The units advance on narrow frontages to fix the defense, while the main body attempts to envelop the position.

The march in the forests differs from from normal combat in that--

- It enhances the role of reconnaissance and flank protection. The OPFOR reinforces its reconnaissance troops with mechanized or motorized infantry troops. Each battalion is responsible for its own protection against ambushes or surprise. Flank security elements move closer than normal to the column. They travel on a route parallel to the main body.
- Forward detachments assume a greater importance, both to forestall the creation of a defensive line and to cover the deployment of the main body. The concealment offered by the forest facilitates their use.
- Movement support detachments have to be stronger than in open warfare.
- Commanders move well forward so that they can make rapid decisions on the basis of personal observation of the ground and enemy.
- Route marking and traffic control assume increased importance.

ORGANIZATION FOR COMBAT

The OPFOR uses multiple-echelons. Maneuver is easier to organize from the depth of deployment than along the front. If lateral movement is impossible, units may deploy in one echelon with a reserve. Again departing from tactical practice on open ground, even companies maintain a small reserve.

The OPFOR prefers to use mechanized and motorized infantry when fighting in the forest. Whenever possible, it reinforces units with combat engineers and artillery. It prefers direct-fire artillery in the woods, since that is usually more appropriate than indirect fire. Often, as in combat in urban areas, the OPFOR forms assault battalions and groups (companies). (See Chapter 16.) It reinforces each with tanks, artillery, and mortars for both direct and indirect fires, air defense, and combat engineers.

The OPFOR may attach tanks (when available) down to the infantry companies and even platoons in a fire support role. In return, it assigns a group of three or four infantrymen and small engineer elements equipped with mine detectors and explosive charges to protect the tanks. Thus, the enemy defenders can expect to see OPFOR tanks in areas the enemy would consider virtually impassable.

OFFENSE

Forests may sit astride important axes of advance. As potential redoubts, the enemy may fortify and defend them. As is the case in build-up areas, the OPFOR prefers to bypass such an area and isolate the defenders. If, however, an axis through a forest is likely to surprise the enemy and catch him off balance, the OPFOR may select it as the best means of overcoming a strong defense. When obliged to attack under these conditions, the OPFOR plans the attack thoroughly, using time to conduct a thorough reconnaissance.

The forest hampers observation, maneuver, orientation, target designation, fire adjustment, C^2, and coordination. Battle in the forest is at short range. The restricted nature of the maneuver and the difficulty of combat on a continuous front increases the importance of independent actions of subordinate units. At the same time, the forest creates favorable conditions for the following:

- Camouflage, concealment, and deception.
- Concealed approaches.
- Surprise attacks on the enemy.
- Company- and platoon-level infiltrations into the depth of the enemy defense.
- Assaults against the enemy's flank and rear.
- The successful employment of blinding smoke screens.

During the attack, the OPFOR conducts 360-degree observation with special attention given to the detection and destruction of antitank weapons and to local security. It sends out foot patrols to the front and flanks to prevent a surprise counterattack. Whenever possible, the OPFOR bypasses abatis' and other obstacles. On approaching obstacles it cannot bypass, it fires on them and reconnoiters them. Then it uses engineers to dismantle or use tanks, or engineer demolitions to destroy them.

Forms of Maneuver

The OPFOR tries to exploit the fragmented front in forested areas by using a combination of **penetrations** and **envelopments**. Offensive actions in forests combine tactics to fix the defender with enveloping movements executed to either bypass the enemy or attack him from the rear.

Whenever possible, the OPFOR avoids frontal attacks and uses enveloping maneuvers. It makes every effort to convert the advance into a pursuit, preventing the enemy from re-establishing a stable defense on successive lines. Thus, the main emphasis is on parallel, rather than frontal pursuit, with columns positioning to overtake the retreating force and attack it from the flank or rear. The OPFOR uses heliborne assaults, if lift is available, to seize key road and track junctions, possible defense positions on important axes, or to insert ambush patrols.

Even if entire units do not advance through large wooded areas, the OPFOR frequently uses the forests to conceal the **infiltration** of reinforced battalion- or larger-sized units. It also uses large wooded areas to hide airborne or air assault troops that it inserted into the enemy rear to serve as raiding units. The OPFOR is a master at infiltrating units up to brigade level. However, the normal size for an infiltration force is a company or below.

Battalion and Company

The OPFOR executes attacks in forests with battalion- or company-sized forces. It uses the normal crisscross pattern of trails and natural breaks found in forests. It organizes its advance on a wider frontage than normal, and on multiple axes using as many routes as possible to overextend and confuse the defense and conceal the main axis. Battalion and companies attack on each axis. Strike sectors are quite narrow (50 meters for a platoon), but distances between available approaches may widen the overall attack zone of the company. Platoons are normally 150 to 200 meters apart, but may separate by as much as 500 meters.

The OPFOR may attach a tank platoon to a mechanized or motorized infantry company during battle in the forest. Tanks maneuver on terrain accessible for them, chiefly along roads and openings and on lightly wooded terrain (usually in or behind the extended line of infantry platoons). Tanks support the platoon's assault with fire. In the assault, contrary to normal practice, the infantrymen lead and supporting tanks and artillery follow. Infantrymen determine targets for the tanks, destroy enemy antitank weapons, and support the tanks' advance. In this situation, APCs advance behind the tanks and use their organic weapons to destroy enemy hampering the advance.

Platoon

Infantry platoons fight dismounted in the attack. Commanders reduce the spacing between soldiers and squads. The platoon leader advances in the extended line of the base squad. To speed up the advance and provide protection for the tanks, motorized and mechanized infantry troops may ride on top of tanks or APCs.

Command and Control

The unevenness of the advance of subordinate units in forests, as well as the wide intervals between platoons and companies, requires continual effort to maintain contact with subordinates and with adjacent units. Commanders must also ensure security on open flanks.

DEFENSE

The forest is a significant obstacle to an advancing enemy and may not be passable even for state-of-the-art combat equipment. There are not enough roads, which forces the enemy to advance along accessible axes. On the other hand, the forest facilitates prepared defenses and camouflage, concealment, and deception.

The OPFOR does not hold the edge of the forest in strength because it is vulnerable to enemy artillery and air attack. Depending on the nature of the forest, it places its forward edge ahead of the treeline or 50 to 100 meters or more it into the depth of the forest. Soldiers clear terrain to improve fields of observation and fire. The OPFOR organizes its defense in depth and bases it on a series of company strongpoints, employing all-round defense, and on key obstacles. It considers clearings ideal for defense. It can concentrate its fires on the points where the enemy will have to enter the clearing. It uses reinforcing

antitank weapons, tanks, and direct fire artillery to maximum effect in such a strongpoint. These systems occupy firing positions on the edges near openings, glades, and crossroads to ensure the conduct of fire to maximum range. The OPFOR uses forest salients to organize flanking, cross, and surprise close-range fire. It normally assigns some sharpshooters, snipers and machinegunners to fire from trees.

Engineers and soldiers fortify company-and platoon-level strongpoints and camouflage them very well. The OPFOR patrols gaps between the strongpoints and possible bypasses denied by obstacles and ambushes. Engineers prepare the emplacements, shelters, trenches, and communication trenches for strongpoints on terrain with a low groundwater level. In sectors where there is no need to dig communication trenches, signs or marks on trees denote movement routes to the rear. As a result of limited visibility, it is common to fight close-range battles. The OPFOR uses small unit ambushes and surprise. It also extensively uses close-range fires, hand grenades, antitank grenades, and grenade launchers.

Counterattack

The OPFOR stresses active defense. It does not passively wait for attacks to develop. Continuous reconnaissance reveals the enemy's intentions. This enables OPFOR artillery and air attacks to disrupt and delay enemy preparations. The defenders thoroughly reconnoiter concealed routes for counterattacks. If necessary, the engineers improve them. Battalions and higher maintain reserves for counterattacks. The OPFOR avoids large reserves in favor of numerous small reserves positioned near the forward edge. These reserves remain available at short notice.

In the counterattack, speed and the ability to react are more important than size. The defending force immediately counterattacks, even in small groups, when the attacker penetrates a position. Patrols infiltrate into the enemy rear to ambush and attack enemy C^2.

Withdrawal

Should the enemy achieve a penetration, the OPFOR commander is unlikely to withdraw his forces completely from the area. Instead, he reorganizes battalions and companies and establishes new strongpoints or concealed areas to launch raids. Remnants of OPFOR units will continue to harass and disrupt enemy rear communications until they destroy them.

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The OPFOR approach to the conduct of combat in cold weather is to employ regular units with few organizational and equipment modifications. The OPFOR has no special organizations designated to serve as cold weather troops. OPFOR expects mechanized, motorized, and light infantry companies to operate under various conditions of terrain and weather.

The OPFOR stresses that extreme cold weather is no obstacle to a well-trained unit. The correct evaluation and exploitation of the winter features permit the assignment of the same missions as in the summer, although at reduced rates of speed. The OPFOR also adopts winter countermeasures, such as special camouflage, warning, maintenance, and supply measures to ensure the successful accomplishment of these missions. Offensive and defensive frontages and depths are often greater in the winter. OPFOR doctrine stresses the use of long winter nights, snowfalls, blizzards, fogs, and strong frosts to achieve surprise. This affords the opportunity for major successes. Intense combat can wear out the enemy by denying him shelter, destroying supplies and installations and cutting communications. The OPFOR carries out deep infiltration raids using specially trained troops.

EFFECTS ON PERSONNEL AND EQUIPMENT

Cold weather combat is extremely taxing on both personnel and equipment. The extreme environmental constraints of winter can quickly erode the effectiveness of unprepared troops. Special precautions ensure maximum combat readiness. For example, engineers construct shelters for communications personnel and equipment to keep lines of communication (LOCs) open. Any planning takes into account the reduction in fire effectiveness and mobility caused by cold and snow as well as increased work at night due to shorter daylight hours. Deep snow also makes orientation and camouflage difficult, while improving visibility by day and night in clear weather (although snow blindness becomes a problem).

Personnel

To protect against the cold and to conceal themselves against the stark winter landscape, OPFOR troops wear winter clothing and camouflage gear. Before starting a march, troops make certain that all clothing, socks, foot wrappings, shoes, and other apparel are dry. The OPFOR prohibits thick clothing because it holds moisture. The soldiers cover exposed parts of their bodies with salves and fish oil to protect their skin. They continually check for symptoms of frostbite. During a march, troops inspect socks or foot wrappings frequently for excess moisture and place wet clothing items next to their chest to dry them.

The OPFOR provides warm food and supplies warm water in canteens with insulated canteen covers. When riding in uncovered vehicles, all personnel except those engaged in surveillance sit facing away from the direction of the vehicle's advance. The soldiers place straw, straw mats, branches, or hay on the beds of vehicles to prevent freezing the riders' feet.

The OPFOR issues mechanized and motorized infantry companies special equipment to carry out winter combat. Higher commands issue protective goggles, special clothing, footwear, warming tents, skis, special lubricants, and heating and lighting equipment. The OPFOR constructs ski racks on the sides of APCs and trucks. Soldiers clean, grease, and prepare weapons for firing at low temperatures.

Infantry Weapons

Infantry weapons function under conditions of cold, ice, and snow when the troops maintain, lubricate, and use them properly. The following should be considered in cold weather planning:

- In extreme cold, metal becomes brittle. Increased parts breakage occurs in all types of weapons.
- Many weapons create ice fog that, on a still day, may obscure the gunner's vision, thus requiring movement to alternate positions or the use of a flank observer to direct the fire.
- One problem is to keep snow and ice out of the working parts, barrels, and sights. The OPFOR issues special breech and muzzle covers.
- Take special care to avoid touching metal parts of weapons with exposed skin. This is especially true when an individual assumes a firing position and the side of the face contacts the weapon.

- Condensation forms on weapons when the soldiers take their weapons from extreme cold into any type of heated shelter. When a soldier takes a weapon out into the cold air, the film of condensation freezes, especially in the internal parts, causing stoppage and malfunctions. When one takes a weapon into heated shelter for cleaning purposes, condensation may continue for as long as 1 hour. Therefore, when time is available, solders wait 1 hour, remove all condensation, and then clean the weapon.
- The OPFOR uses proven firing data for recoilless rifles and antitank grenade launchers (ATGLs), and increases the back blast areas to compensate for the slower burning propellant. The ATGL gunners wear face masks for protection from the flying particles of propellant.

Vehicles

The degree of snow and cold can have a major effect on combat and maneuver. For example, it is difficult to move on foot when snow cover reaches a depth of 15 to 20 cm and impossible to move (unaided) when it reaches a depth of 40 cm. Wheeled vehicles and tanks can normally operate in snow 10 to 50 cm deep. However, deep snow cover complicates maneuver, increasing the tactical importance of roads and areas with insignificant accumulations of snow. (See figure 20-1.)

Snow under 50 cm deep	Normal movement 18 to 20 km/hrl
Snow 50 to 75 cm deep	Short moves 10 km/hr
Snow over 75 cm deep	Restricted to roads or cleared routes

Figure 20-1 Effects of snow on tank and IFV movement.

In extremely cold weather, the OPFOR uses special fuel mixtures, oils, and lubricants. Mechanics also fit vehicles with special winterized couplings on fuel pumps, engine heating and cooling systems, and exhaust systems. Batteries also receive special attention. Heaters and warming covers aid in starting vehicles.

OPFOR wheeled vehicles use chains and move behind tracked vehicles in march columns whenever possible, to increase cross-country mobility. These vehicles also carry extra sandbags, mats, cables and pioneer tools to aid their over-the-snow capability. Drivers reduce wheeled vehicle tire pressure to aid mobility in snow. Engineers prepare treadway bridges and mats. The OPFOR equips crew-served weapons attached to the company with ski/sled mounts. Sandbags, mats, cables, and pioneer tools also add to over-the-snow capability. Tanks carry logs or wooden beams for use as traction aids. They also use pads during slippery conditions and tow items in the snow to camouflage their tracks. March columns can include tanks with dozer blades, snow-moving equipment, and road graders. Preparations for military activity in extreme cold include--

- Issuing special clothing and equipment, particularly heavy winter overcoats, hats, fur-lined mittens, and felt boots.
- Providing an enriched, high-calorie diet with hot food and drink as often as possible.
- Providing warming tents and shelters whenever possible.
- Using special oils and lubricants for vehicles, and crew-served and individual weapons.

OPFOR units that fight in cold weather most of time use special tracked APCs instead of wheeled APCs. Although unarmored or lightly armored, their very low ground pressure makes them ideal for marshy or snowy regions. The OPFOR may use these vehicles as reconnaissance vehicles and prime movers for mortars and antitank guns.

Artillery

Difficulty of surveying in deep snow and conditions of poor visibility affects artillery support in extreme cold. Movement and firing site preparation are also more difficult. Snow more than 30 cm deep limits the maneuverability of towed artillery. Therefore the OPFOR equips artillery pieces with skis or puts them on sleds.

Low temperatures make grease and lubricants less viscous, and can damage moving parts (particularly the recoil mechanism during firing). Mortar baseplates may crack or even break. Also mortars can experience an increase in breakage of firing pins. When using mortars, the OPFOR cushions the baseplates against the frozen ground by using sandbags, small branches or bushes, evergreen boughs, small logs or similar type material. The OPFOR also takes precautions to prevent the mortar baseplate from becoming frozen to the ground, and to secure the power supply for aiming post lights in a warm tent or shelter. Because deep snow greatly reduces the bursting radius of projectiles, the number of rounds required for target coverage increases. At the same time, the rate of fire decreases due to additional preparation time of ammunition and maintenance of the weapons. Range estimation against a snowy background makes adjustment of fire more difficult. The use of high-technology equipment can overcome or significantly reduce many problems associated with fire support in extreme cold. This includes land navigation systems, ground surveillance radars, and laser rangefinders.

MARCH

Snow cover and low temperatures create difficulties in organizing and conducting a march in extremely cold areas. The commander must provide personnel with adequate cold weather clothing and equipment. He must also ensure vehicles have winter diesel fuel and coolant. He selects vehicle halt locations that are on level sites, protected from the wind.

Drivers of tanks, IFVs, and APCs must--

- Close all hatches and cover them with insulating mats.
- Periodically warm up vehicle engines.
- Constantly keep an eye on coolant temperature readings.

- Take measures to prevent tracks from freezing to the soil during long duration halts.

To carry out a march as quickly as possible in bitter cold, the OPFOR uses existing road networks. The commander reviews the mission, reconnaissance information, halt area sites, security measures, and appropriate speeds prior to movement. The speed of the march depends upon strains imposed on the troops, the conditions of the road, the depth of snow, and the temperature. (See Figures 20-2 and 20-3.)

Infantry and heavy vehicles can cross ice. However, this involves reconnaissance to determine that the ice is thick enough to support the weight of the personnel or vehicles crossing. (See Figure 20-4.)

Infantry (snow less than 30 cm deep)	3 to 4 km/hr
Infantry (snow over 30 cm deep)	1 to 2 km/hr
Soldier on skis	6 to 8 km/hr
Company on skis	3 to 6 km/hr
Tracked vehicles	18 to 24 km/hr

Figure 20-2. Average rates of march in snow.

Dismounted infantry	12 to 24 km
Ski unit	32 to 40 km
Tracked vehicles	96 to 112 km

Figure 20-3. Distances covered in one day's march.

Dismounted infantry	10 cm
Medium tanks	70 cm

Figure 20-4. Ice thickness required for passage.

Winter conditions demand careful selection of rest sites. Troops take short breaks to check personnel and equipment. They take the first break (which lasts for 10 minutes) after 15 minutes of march and they take the second break (which lasts for 10 minutes) after 30 to 60 minutes of march. When traveling in vehicles, personnel take a 10- to 15- minute break after 60 to 90 minutes of travel.

OFFENSE

The offense normally occurs during a snowstorm, in a dense fog, or at night, to achieve surprise. If faced with a formidable enemy strongpoint, part of the force attacks the front while the main force attacks the flanks and rear. When moving in close to the enemy, personnel remove skis and approach the enemy on foot using trenches dug in the snow. This also provides a certain amount of concealment. To ensure a quick firing response, the OPFOR moves howitzers, mortars, multiple rocket launchers, machineguns, and other weapons on skis or sleds.

Reconnaissance

In the offense, the OPFOR emphasizes increased reconnaissance. In addition to their usual mission, reconnaissance elements in cold weather areas must gather information on the--

- Enemy organization, and weapons.
- Logistics support of enemy troops for combat in the given area.
- Enemy's special equipment, and alignment of combat formations.
- Presence of snow and ice obstacles.

They also determine structures for personnel shelter and warming, as well as ice thickness and strength on rivers and lakes. They also note the depth and density of snow cover, the freezing of marshes, and presence the and trafficability of trails in lake and tundra areas.

Frequently, personnel from each of the first-echelon companies augment the reconnaissance patrols of the motorized and mechanized infantry battalion. The battalion commander may assign a reconnaissance mission to up to a platoon from each of these companies. Helicopters (when and if available) can assist by transporting deep patrols.

Planning

The staff conducts more detailed planning coordination with adjacent units in extreme weather. It incorporates and continually updates reconnaissance information during this phase. The plan specifies the employment of engineers, artillery, tanks, and all other supporting elements, along with routes, axes of attack, and warming shelters.

The OPFOR decision-making process remains the same in cold weather combat. In winter, the attack plan takes into account both the limitations and the opportunities that cold weather and winterized terrain present. These include--

- Centralizing forces in strongholds rather than random dispersal.
- Preparing and camouflaging warming shelters for personnel and equipment in the assembly area.
- Providing personnel with winter gear.
- Watching for personnel fatigue due to cold.
- Determining trafficability and the capability of mounted and dismounted combat in snow and icy conditions.
- Using poor visibility to one's own advantage.
- Identifying high ground and road as priorities for occupation.
- Increasing independent actions and in-depth deployment.
- Completing winter camouflage and movement security.

- Decreasing maneuverability of weapons.
- Minimizing troop and equipment exposure. Extreme weather increases the importance of shelters.
- Organizing special reconnaissance to locate ice holes, snow banks, and other obstacles.
- Preparing for the clearing of routes. The OPFOR favors open terrain in the attack because the snow is less deep than in woods, ravines, depressions, etc.
- Increasing biological and chemical protective measures.
- Furnishing protection from the cold and supplying hot food and drink.
- Arranging for rapid battlefield evacuation and protection from the cold for casualties. Higher headquarters may provide dog sled teams and helicopters for these tasks.
- Modifying tactics to accommodate restrictions on movement.
- Planning for the reduction in human and mechanical efficiency.
- Increasing the time for construction of defenses due to frozen earth.
- Deep snow reduces the effectiveness of high-explosive shells, mines, and non-persistent gas while increasing the thermal radiation effects of nuclear explosions.
- Vehicles are more difficult to operate and maintain.
- Fluid medical supplies, such as plasma and morphine, freeze if not well protected.
- Electromagnetic anomalies and storms disrupt communications.
- Colder powder temperatures reduce the range of artillery shells and bullets.
- Deep snow makes orientation difficult.

- Makes river and swamps passable.
- Restricts air support, and decreases the range of bullets and shell.
- Daylight hours are shorter in winter months.

Prior to finalizing attack plans, the OPFOR commander--
- Reconnoiters the enemy's defenses.
- Identifies strongpoints and open spaces between strongpoints.
- Evaluates obstacles, and determines the level of security.
- Protects his own personnel and equipment.
- Ensures logistical support to his troops.

Attack Against Defending Enemy

Basic tactical concepts do not differ greatly from those under normal conditions, though there are modifications and shifts in emphasis. The OPFOR conducts the offense chiefly along roads, normally from positions in direct contact with the enemy. Infantry and tank battalions attack as part of brigade main attack, or independently on a separate axis. The commander may use maneuver units as an enveloping detachment to attack key objectives in coordination with units attacking from the front.

Because of the conditions, the commander may limit artillery and tanks to the roads. This can force OPFOR units to conduct successive frontal attacks as the only way to build up pressure. The OPFOR makes every effort to envelop the enemy. Even small enveloping detachments of company size have a great effect on the enemy. The OPFOR takes advantage of bad weather to achieve surprise in the attack.

Frontages and Combat Formation

Where terrain and snow limit maneuver, commanders normally assign zones of advance that are larger than usual. However, conditions may restrict attack frontages. It is normal to reduce attack frontages in the snow because of the difficulty in maneuvering.

The mechanized or motorized infantry company can have an attack zone of up to 1,000 meters with all three platoons abreast and a reinforced squad in reserve. Winter conditions make maneuver difficult (especially in deep snow), and reserves are often larger than under normal conditions. A battalion operating in deep snow, may attack in one echelon and maintain up to a company in reserve. Reserves are probably larger.

Objectives

Key terrain is similar to that considered under normal conditions (e.g., civilian housing areas, road and road junctions, and hilltops). Roads and trails assume a crucial importance to both maneuver and speed of advance in cold weather. Villages and towns are important, quite apart from their tactical significance, as sources of warmth and shelter. The OPFOR may contest possession of them solely for this reason. Also, the OPFOR often attacks enemy logistics facilities and LOCs, rather than enemy units organized in defensive positions.

Envelopment

Surprise encirclements or bypass operations are more common than frontal attacks. The OPFOR directs main attacks usually against the flanks or rear areas while it conducts supporting attacks against the enemy front to hold him in position. It may employ an additional force to bypass the enemy position and cut enemy routes of reinforcement or withdrawal.

Attack from the March

Attacks take longer to mount in extreme weather than in normal conditions. It is also more difficult to generate momentum. To ease these problems, and to reduce fatigue and exposure to the elements, the OPFOR selects assembly areas that are closer than normal to the enemy prior to the attack. At the assembly area, tents and covers protect the troops from the cold and from enemy observation. Guides escort troops from the assembly area to the departure line if visibility is poor. Second echelons and reserves also move closer to the leading elements to reduce commitment times. Because the momentum of the advance is somewhat slow, the OPFOR places greater emphasis than ever on maintaining the momentum of battle into the enemy's depth to prevent his recovery from tactical reverses.

The OPFOR places the line of commitment as close as possible to the enemy defensive front. Artillery moves forward at the beginning of the attack to prepare firing bases. Mortars and tanks provide additional fire support in depth. Units avoid halting in any one location for a long period during the march.

Attack on Skis

Troops can attack on skis or sleds towed behind armored vehicles. Tanks can tow two infantry squads on skis. IFVs and APCs can tow one. Soldiers can accurately fire their weapons while being towed. On reaching the assault position, troops release tow cables or ropes and form an assault position, making a coordinated attack with the tanks. In deep snow (defined as 1.5 to 2 times the ground clearance of the vehicle), troops may attack mounted on tanks. Some units may be actual ski units proficient in the use of skis. These may vary in size. They use speed and maneuverability when making an encirclement.

The mechanized infantry company often attacks dismounted . The motorized infantry always attacks dismounted. Either can attack on skis. When dismounted in deep snow, the infantry may move faster than the tanks. Tanks normally advance within the line of troops or behind the line, supporting the attack with fire. APCs follow at a distance of up to 50 meters behind the infantry and support by fire. By attacking in this fashion, the commander ensures simultaneous arrival of tanks and infantry at the assault position. The OPFOR mounts attached crew-served weapons on sleds and the armored vehicless also tow them forward.

When attacking on skis or snowshoes, the battle formation should use the trails broken by the lead elements of the attacking force. The OPFOR makes every attempt to get as close as possible to the enemy before opening fire and to attack downhill when on skis or snowshoes. Troops do not disperse or halt to fire until reaching the assault position or enemy fire becomes effective.

Tank-Borne Infantry

When the snow is deep, the infantry may attack mounted on tanks. Squad leaders, positioned behind the tank turrets, maintain communications with the tank commanders over the tank intercoms. At the proper time, the squad leader notifies the tank commander to slow down and orders his squad to jump off the tank. The squad then moves behind the tank.

Pursuit

In this phase of the attack, the attacking forces continually pursue the enemy into his defensive depths. OPFOR units consider the use of small units to block the enemy's escape route as an important condition to the success of a pursuit. Whenever possible, troops mounted in IFVs and APCs conduct the pursuit. However, in deep snow, the company commander may send his IFVs and APCs by road and mount his infantry on attached tanks and continue the pursuit. When there are no roads, the pursuit of the enemy using tank-borne infantry might be at an average speed of 8 to 12 kilometers per hour. The OPFOR also uses airborne or air assault forces as blocking forces or to secure key terrain or objectives.

Engineer Support

Severe weather conditions complicate engineer activities and require greater effort and more assets than normal. Engineer tasks include--

- Preparing routes and assembly areas.
- Preparing shelters, cover, and defensive positions.
- Preparing artillery firing positions.
- Clearing paths through obstacles and ice.

DEFENSE

As is often the case in defense in special conditions, weaker forces can hold a larger sector located in cold weather regions than on normal terrain. The OPFOR increases the intervals between platoon and company strongpoints to achieve wider frontages. It positions strongpoints to cover roads, dominant high ground, defiles, and river crossings. Obstacles, patrols, and ambushes cover the gaps.

Frontages

Rough, broken terrain in cold weather regions often restricts the movement of vehicles to roadways to maintain an acceptable rate of advance. The depth of the snow may also limit trafficablity. Although the frontage may be wide, the majority of forces concentrate at strongpoints along roads, intersections, or built-up areas that are likely enemy objectives.

Units	Width (km)	Depth (km)
Division	30	15 to 20 *
Brigade	10 to 18	4.5
Battalion	1.5 to 3	1.5 to 2
Company	1 to 2	0.5 to 1 *
Platoon	up to 0.5 km	0.5 to 1 *
		* approximate depths

Figure 20-5. Defense frontages in cold weather regions.

In deep snow, the OPFOR may increase frontages. It may assign a motorized infantry company a frontage of up to 2,000 meters and platoons up to 500 meters, with gaps up to 300 meters between companies and up to 200 meters between platoons. (See Figure 20-5.)

Company and Platoon Strongpoints

Large sectors of difficult terrain, rocky soils, the limited number of roads, and the presence of lakes and rivers directly influence defensive tactics. These conditions dictate that the defense be established as separate company and platoon strongpoints, often with considerable distances between them. These strongpoints interdict roads, areas between lakes and rivers, defiles, and other axes accessible to the enemy. The difficulty in forming a continuous defense without gaps and exposed flanks makes it easier for the enemy to accomplish deep and close envelopments. Because of this situation, a careful study of the terrain between strongpoints becomes very important. The frontline commander determines the most vulnerable points in the defense and possible avenues of approach by studying the terrain. He then prepares barriers and obstacles to cover them.

The OPFOR attempts to use adverse weather to its advantage. It delays the attacking enemy and denies him shelter, thus prolonging his exposure to the cold. It carefully selects areas of battle to control enemy approach routes. Ideally, the OPFOR improves its defensive area to protect its troops from the cold while forcing enemy troops to expose themselves for extended periods of time. It conceals strongpoints with snow as much as possible. Engineers build parapets of packed snow around weapons and vehicles. Soldiers also pack snow on combat vehicles to aid in concealment.

Defenses in winter include antitank obstacles, trenches, packed snow 3 to 4 meters wide above ground, and fake fortifications. The defenders use snow to camouflage all strongpoints and defensive positions. Along tank and infantry approach routes, units build walls of frozen snow, bury mines, and blow frozen rivers to form water obstacles. They clear civilian structures to create obstacles and to prevent the enemy from using them. Defenders often establish first aid stations in civilian houses as well as in covered areas or in caves, and construct dispensaries to provide protection for the injured. In order to provide rapid evacuation, the OPFOR uses vehicles, sleds, and even horse-drawn sleighs.

In the defense, surveillance and duty personnel position themselves at the strongpoint. Less than a third of the fighting strength occupies defense positions not under enemy attack. The remaining troops occupy warming shelters. This permits the majority of troops to be at peak efficiency in the event of an attack. At night or in the limited visibility of a snowstorm, the OPFOR reinforces surveillance and dispatches additional scouts. Duty personnel and firepower assets prepare for combat. The remaining personnel prepare for 360-degree defense by constructing trenches and by providing cover from aerial attacks. Artillery and mortars prepare to fire long-range to suppress built-up areas with the intention of forcing the enemy out into the cold for extended periods of time. Infiltrators (ski troops) may also attack the enemy rear, set up obstacles along approach routes, destroy main supply routes, or attack the enemy's C^2 facilities.

In organizing a defensive position in the snow, the company commander makes certain preparations in addition to the normal ones:

- To aid the construction of defensive positions, he places the strongest defenses along roads and in areas with light snow cover. Populated areas and forest provide shelter and the OPFOR often uses them as strongpoints.
- He strengthens flanks to counter ski-borne attacks. The second-echelon company and/or the battalion reserve may use skis.
- He provides special equipment to attached tanks and artillery to improve their cross-country mobility.
- He directs the construction of warming shelters.
- In deep snow, the OPFOR uses ice to form slippery banks in front of the defenses and to build above ground trenches in swampy areas.

During prolonged combat, the commander organizes special snow-clearing teams to keep minefields and other obstacles effective.

Engineer Support

Conditions require increased engineer support to the infantry company. Combat engineers use explosive charges to construct trenches and shelters. IFVs and APCs use natural cover or trenches. Tanks with bulldozer attachments dig their own positions. The OPFOR uses snow, ice, and winter camouflage nets to camouflage its positions, tanks and IFVs and APCs.

As in any defensive situation, one of the primary engineer tasks is minelaying. However, deep snow and ice necessitate some measures peculiar to cold weather conditions.

In snow, the OPFOR uses white mines and colored tracing tapes. To increase the efficiency of both the men and the mines, OPFOR soldiers do as much work as possible in warm shelters. Arming of mines in quantity is a difficult task in low temperatures. When laying mines in the snow, track discipline is important. With no snowfall imminent, a well-tracked terrain is best for minefields.

Antitank Mines

Antitank mines are not always effective under heavy snow cover. If buried too deeply, the snow causes them to become bridged over or may serve as a cushion to the detonator. The OPFOR places mines on the ground after removing the snow or near the surface of the snow. The mine may fail to detonate if water enters it and freezes. A thaw or concentrated traffic often renews the effectiveness of a snow-covered mine. The OPFOR inspects minefields periodically and performs regular maintenance on them. White or painted trip wires are effective.

Antipersonnel Mines

The OPFOR uses antipersonnel mines for mining ski and other trails in the snow. Soldiers lay pressure-fuzed mines about 2 cm under the snow surface. This is because personnel distribute their weight over the length of the ski. With pull-fuzed mine, the soldiers place trip wires at various heights above the snow surface by tying it to the trees and saplings off the trail. To ensure activation, the OPFOR places pressure-fuzed antipersonnel mines on a firm bearing surface such as boards or large rocks. Antipersonnel mines that activate by pull or pressure fuzes are effective on ski trails.

Mines Under Ice

To emplace mines under ice, the OPFOR drills holes, and suspends mines by cords about 60 cm below the ice. The field is laid out so the mines are staggered about 3 meters apart. The OPFOR can detonate the field by electrically exploding one or more of the mines in the field. Defensively, the OPFOR uses mines to restrict the enemy from using ice on lakes or rivers as avenues of approach or as routes of withdrawal. Depending on the thickness of the ice and the number of mines used, the OPFOR may blow gaps 10 to 15 meters in width. In an approach march or an attack over ice, the OPFOR uses mines to protect open flanks.

CAMOUFLAGE

In cold weather, the whiteness of the countryside emphasizes any item that may not blend in naturally with the surroundings. Rocks, scrub brushes, and shadows make sharp contrast with the snow. Snow-covered terrain in wooded regions, when viewed from the air, reveals a surprising proportion of dark areas. Snow exaggerates contrasts and makes camouflage essential. Furthermore, every movement by vehicles or dismounted troops leaves tracks in the snow. To camouflage themselves in the snow, troops wear white outer garments and either place their equipment in white containers or wrap it in white cloth. Before every movement, commanders must consider to how these tracks can be kept to a minimum. Nature may assist by covering tracks with newly fallen snow or by providing a storm concealing movement. Camouflage and concealment from air observation are of the greatest concern. Deceptive track plans are essential.

Camouflage techniques include the correct use of camouflage clothing; the camouflage of shelters, weapons, defensive positions, halt areas; and the selection of sites making the best use of natural camouflage. Camouflage often requires--
- Using of nets and natural materials.
- Enforcing track discipline.
- Controling light, smoke,and noise.
- Practicing deception by using available natural materials and specially constructed dummies.

On occasion, the OPFOR uses white smoke to help the camouflage plan.

The OPFOR uses snow and other natural materials to conceal trenches and foxholes by placing loose snow on the side toward the enemy. It makes the slope of the snow gentle with sharp angles hidden. It chooses locations for emplacements and vehicles to take advantage of existing dark patterns. Soldiers whitewash or use white paint on camouflage nets, wire mesh, and garnishing materials used for camouflage on snow-covered terrain to improve their effectiveness. The OPFOR normally paints its vehicles, aircraft, artillery pieces, and tanks white to blend with their surroundings. Vehicle crews must pile snow around tracks and wheels when they halt.

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The primary consideration of conducting combat is continuity. Nonstop conduct of the battle in both day and night is of the greatest importance in achieving this. This permits maintaining the initiative, imposing one's will on the enemy, disrupting his plans, and, as a result, achieving decisive victory sometimes with fewer forces. The night contributes to achieving covert maneuver and surprise.

The battle may continue on into the night to retain the initiative with a high offensive tempo. Night affords surprise and concealment from enemy observation while reducing visibility, effectiveness of fires, and control and coordination of units. Troops and commanders must know how night effects visibility, audibility, and the employment of supporting units and arms.

The OPFOR considers darkness more of an advantage and an opportunity than a reason for interruption of combat. By skillfully employing the advantage of night conditions, attacking units can fulfill their mission with smaller losses in personnel and equipment. The attackers use the dark of night to--

- Achieve surprise.
- Increase the rate of advance.
- Perform marches and maneuvers.
- Concentrate men and materiel in a decisive direction.
- Hamper enemy use of most weapons, airborne troops, and aviation.
- Gain time.

Night also presents problems. It is more difficult to orient oneself at night and to maintain the correct direction of movement. It reduces the effectiveness of aimed fire, and makes reconnaissance and selection of targets difficult. The OPFOR feels, however, that it can successfully overcome these negative factors through frequent and careful training.

CONDITIONS AFFECTING NIGHT COMBAT

Night conditions have both a positive and a negative effect on the conduct of night combat. Darkness modifies the outline, shape, and coloring of local objects and distorts separation distances. Dark objects seem farther away than they really are, while lighter ones appear to be closer. According to the OPFOR, on a clear night one can recognize land relief and coloration up to 400 meters with the naked eye. Under a bright moon, one can spot a moving man at 240 meters, and using binoculars, at 700 meters. Light is visible for a great distance at night. (See Figure 21-1.)

Sound is another factor that changes at night and leads to both physical and psychological distortion. At night, sound seems louder and carries farther. (See Figure 21-2.) One cannot always determine the directions from which sounds originate. Weather conditions such as rain affects both audibility and visibility and serve as a definite advantage for the attacker.

The lack of convection (vertical streams of air) also affects night combat. Under these conditions, the persistence of gas, fog, or smoke is considerably higher.

The physical and psychological condition of the troops also affects night combat. Darkness stimulates the imagination and a feeling of insecurity that might eventually lead to panic. Fatigue and symptoms of exhaustion affects those who have to stay awake.

Source	Distances
Vehicle headlights	4 to 8 km
Muzzle flashes from single cannons	4 to 5 km
Muzzle flashes from small arms	1.5 to 2 km
Bonfires	6 to 8 km
Flashlights	up to 1.5 to 2 km
Lighted match	up to 1.5 km
Lighted cigarette	500 to 800 m

Figure 21-1. Distances at which light sources are visible with naked eye.

Source	Distances
Cannon shot	up to 15 km
Single shot from a rifle	2 to 3 km
Automatic weapons fire	3 to 4 km
Tank movement	
- on a dirt road	up to 1,200 m
- on a highway	3 to 4 km
Motor vehicle movement	
- on a dirt road	up to 500 m
- on a highway	up to 1,000 m
Movement of troops on foot	
- on a dirt road	up to 300 m
- on a highway	up to 600 m
Small arms loading	up to 500 m
Metal on metal	up to 300 m
Conversation of a few men	up to 300 m
Steps of a single man	up to 40 m
Ax blow, sound of a saw	up to 500 m
Blows of a shovel and pickaxes	up to 1,000 m
Screams	up to 1,500 m
Oars on water	up to 2,000 m

Figure 21-2. Distances at which sounds are audible to man at night in open areas.

Darkness reduces the effectiveness of all types of fires. Effective fires are almost impossible without night-vision equipment or illumination. OPFOR artillery and aviation make wide use of illumination munitions but still encounter difficulties in spotting rounds and in conducting artillery reconnaissance. Darkness severely hampers visual identification and acquisition of enemy aircraft by air defense elements. Night conditions can increase the morale of armored troops by lessening the possibility of their tanks being destroyed by antitank artillery. However, orientation, location, maintaining direction of movement, and the general difficulty of operating vehicles in darkness complicates the employment of tanks. Coordination with other units is also difficult.

Chemical weapons have a greater effect on manpower at night due to atmospheric conditions. Consequently, the OPFOR increases its chemical and radiation reconnaissance at night. However, darkness makes monitoring devices difficult to read and NBC

reconnaissance considerably more complex. Notifying the troops of contaminated areas is more difficult in darkness, and commanders appoint more observers than during the day to provide a timely warning of the contaminated area. The observers use voice signals to warn personnel. They do not, however, use signal flashes as a warning because signal flashes reveal friendly locations.

MARCH

The night march is an essential element of night combat. The OPFOR is aware that most important actions begin with an extremely difficult night march. Regardless of their difficulty, night marches are a necessity. Their preparation, organization, security, and execution require a great deal of attention. The successful execution of a night march depends to a large degree on the general maintenance, organization, concealment, and rapid movement of all units.

March Formation

The OPFOR organizes march columns to provide rapid movement and security for the column. Accordingly, it places artillery, engineers, and tanks, if available, at the head of the column, along with experienced officers and personnel who have received extensive training in night combat. It uses personnel who are familiar with the area or even local inhabitants as traffic regulators. On the march, the commander is at the head of the main column. When the battalion moves as part of a brigade column, the battalion commander and his staff always locate at the head of the battalion column. To facilitate uninterrupted movement of the column, commanders direct the painting of white identification markers on tank turrets and installing rear marker lights, with each unit having its own color.

Rate of March

The speed of the column depends on its composition. A column of only wheeled vehicles normally travels at 25 to 30 kilometers per hour on paved roads while tanks or mixed columns travel 15 to 20 kilometers per hour. The condition of the vehicles may also influence the speed of the column. The OPFOR conducts frequent maintenance and periodic inspections prior to the night march. Tanks move with closed hatches. If it is necessary to open up for observation, the tank commander turns off the interior lights.

Rest Halts

Periodic rest halts are also important. Although their number at night is no greater than during the day; their duration depends on the length of the night. Every 3 to 4 hours, the OPFOR makes rest halts lasting 20 to 30 minutes in order to check and service the vehicles. They do not make long halts at night because the hours of darkness are important for secrecy of movement. During short summer nights, commanders plan only a 5 to 10 minute rest at each rest stop. The OPFOR plans rest halts at sources of water, fuel, and cover and at places that afford easy access to the route for continuation of the march. It does not plan rest halts near large population centers, railroad stations, bridges, and other objects of possible enemy interest. The OPFOR never takes rest halts in open areas or near ravines or defiles. During all rest halts, it maintains strict blackout and sound discipline.

Other reasons for short halts may be to--
- Reduce the speed of a mixed column of APCs, IFVs, tanks, and wheeled vehicles. The speed depends upon the condition of the vehicles and roads and on the proficiency of the drivers.

- Shorten the march column by reducing the interval between vehicles.

As during the day marches, radios are on listening silence, although the reporting of NBC and air warnings, as well as the crossing of important phase lines, continue.

Command and Control

The commander of the night march faces numerous problems in exercising command and control of the units. He must identify areas that can present difficulties for concealment and provide instructions for the use of night-vision devices, illumination instruments, and communications.

Senior commanders organize traffic control service. They inform subordinate commanders about the organization of traffic control, where traffic control posts are, and the marking of bypasses and difficult sectors of the route.

The OPFOR makes extensive use of light-signaling equipment (flashlights, signal lights, and flares) for controlling night march. These can indicate--

- The start or finish of any activity.
- Changes in direction of movement.
- Changes in positions,
- Requests for fire support.
- Switching or cessation of fires, and other tasks.

The commander must consider characteristics of the area that can aid concealment. The interval and duration of rest halts and preparation of food also demand his attention. The commander must maintain control of the column while on the march. Troop awareness of the exact location of the commander is most important in assuring precise control of the march.

Security

Security during any night march requires the exercise of strict control of actions that could reveal friendly intentions to the enemy. Strict light and sound discipline are paramount. They are maintained at all times, particularly when passing through open areas. Drivers turn off vehicle headlights and use IR night-vision devices only when approved by the commander of the march. During rest halts, standard procedures prohibit the use of light and the building of bonfires. Messengers handle communications between platoons and companies; or messengers on motorcycles between battalions. The OPFOR employs short radio transmission for communications between brigades.

During the night march, security elements locate closer to the main body than during the day. The distance for security units on the flanks is up to 3 km and for rear security elements, 2 to 3 km.

Proper camouflage is one of the most important security measures for ensuring secrecy of a night march. In planning camouflage measures, commanders determine which sections of the planned route are most difficult for camouflaging. The OPFOR aids concealment from enemy radar by traveling near population centers, near railroads, and on roads in forests.

Reconnaissance

The OPFOR conducts reconnaissance before and during the night march. Reconnaissance elements do not range out as far during the night as they do during the day. Individual patrol vehicles scout at a distance

of 1.5 to 3 km from the main body, while reconnaissance patrols generally operate within a range of 5 to 10 km. Reconnaissance personnel, upon discovering the enemy, determine the enemy's direction, composition, strength, and intentions.

When not in contact with enemy units, reconnaissance units collect information on the character of the march route, existence of bypasses, favorable locations for water crossings, obstacles, and destroyed portions of the road. The commander increases the number and strength of reconnaissance units at night on both the flanks and the head of the column. The OPFOR provides chemical reconnaissance patrols with infrared devices, illuminating markers, contaminated sector boundary markers, and signs to define contaminated sectors.

Engineer Support

The mission of engineer elements is to reconnoiter the roads, rest halt areas, and lines of deployment and to overcome obstacles or find routes around them. The chief of engineers organizes engineer support in accordance with the senior commander's plans and with the facilities of the companies traveling in the column. The importance of passable roads to the overall success of any night combat makes engineer support indispensable. If the equipment is available, the chief of engineers equips his units with the necessary road maintenance and repair equipment to repair damaged roads and facilitate the rapid movement of the column to its objective. The engineers also are indispensable in a night river crossing.

OFFENSE

Doctrine states that the difficulty inherent in a night attack aids the soldier in the defense and that the defender is more confident. However, the OPFOR also recognize that a well-organized surprise attack has a strong negative psychological effect on the defender.

The night attack is one of the basic tactical concepts of OPFOR military doctrine. It may conduct a night attack under various conditions with different objectives in mind. It may be the continuation of daytime combat, or it may be the start of a new attack. The OPFOR continues a daytime attack without a break so that the enemy does not have time to bring up his reserve or to regroup. When the attack occurs in the depth of the enemy defense, a battalion most often receives a combat mission for the entire night. An artillery preparation usually precedes the night attack. However, to achieve surprise, the OPFOR may attack without preparatory fires, tanks, or the use of illumination.

The success of a night attack depends on--

- Precise organization.
- Concealment of preparations.
- Surprise.
- Control and coordination of combat and supporting units.
- Skillful use of all types of fire support.
- Implementation of light discipline.
- Skillful employment of illumination and night-vision devices.

Command and Control

Limited visibility and observation significantly complicates night combat and the commander's responsibility for C^2. Such control is very important and must be firm, flexible, and continuous. However, the difficulty of supervising the activities of personnel, troop orientation, and maintenance of forward movement by the units complicates the control of the various units. Unit commanders must be constantly aware of the situation, make decisions quickly, and assign missions to subordinates with the assurance of their unconditional fulfillment. Commanders take care of the essential matters of organization during the daylight hours, if possible. They assign missions, establish coordination measures, determine reference points visible at night, the axis of attack, and inform personnel of targets and unit identification signals. They pass these to their subordinate commanders. The commander may designate--

- A guide unit.
- A mission for destroying or degrading enemy night-vision devices.
- Boundary lines for attacking units.
- Missions for providing illumination support.
- Light signals for coordination.
- Procedures for marking friendly companies and platoons.
- The use of night-vision devices and short-range reconnaissance radars.
- Determine the illumination of terrain and assault objectives.
- Placement of light markers to mark the axis of attack.
- Marking of companies and platoon flanks, movement routes, and borders.

To maintain control, the battalion commander locates near the forward edge. He uses an command-varient APC whenever one is available. This allows the commander to conduct his own battle surveillance using night-vision devices and illumination equipment. He positions himself where he can best observe both enemy and friendly forces. The company commanders follow directly behind their leading platoons. The commander of a supporting or attached artillery unit usually locates with the battalion commander or nearby, while his unit follows approximately 200 to 250 meters behind the battalion. The battalion commander can establish additional observation posts in the forward area if required.

Units use markers that are 80 to 100 cm high to designate the route to the assault position. They also use three or four markers at intervals of 8 to 10 meters to indicate the route forward on the axis of the attack. The marker for each squad should have its own distinctive emblem.

Units use one-way glowing markers emplaced in the ground to designate subordinate unit the directions to attack and passages through minefields or obstacles. This is critical in attacks from positions in direct contact with the enemy.

In a night attack, the company commander reduces the distance between locations for deployment from march formation into prebattle formation and finally into battle formation. His staff issues colored flashlights to platoons attacking on the flanks. Each platoon has a different color. The OPFOR carefully controls its illumination. Extreme illumination may reveal the combat disposition of the friendly units or it may lead to inadvertent exposure of the night-vision devices.

Because of difficulties of control at night, the OPFOR avoids complicated maneuvers. The most common battle formation at night is the line formation.

As a further control measure, the commander assigns azimuths to each unit in addition to and as a supplement to reference points. The OPFOR depends on the use of azimuths to specify the direction to attack. It considers the use of azimuths a valuable supplement to reference points. Reference points often become destroyed or lost during battle.

The designation of guide units to orient on enhances control. Each battalion designates a guide company, each company a guide platoon, and each platoon, a guide squad. The commander normally locates each guide unit in the center of the force and assigns night-vision devices and illumination means. To designate their position, the guide units discharge colored flares of 5 to 7 second's duration every 10 to 12 minutes.

Meeting Battle

In the meeting battle, the companies of the main body deploy simultaneously from the line of march and may execute turning or enveloping movements. Security forces provide support for the deployment of the main body. Security forces protect the flanks and rear of deploying companies so the enemy cannot--
- Execute an enveloping movement.
- Envelop an exposed flank under the cover of darkness.
- Mount a surprise attack.

The battalion could organize companies, equipped with night-vision devices, in an echeloned battle formation on a threatened flank. The OPFOR illuminates the terrain only after it starts the fire fight or before, if the enemy detects the activity.

Attack Against Defending Enemy

The OPFOR may conduct an attack against a defending enemy at night from positions in direct contact, as well as from the march. It may begin the attack at the beginning or in the middle of the night or just before dawn. Launching an attack at the beginning of the night permits taking advantage of more hours of darkness for routing the enemy. Attacking in the second half of the night or just before dawn is advantageous because the enemy is less vigilant. The OPFOR often starts a night attack 2 or 3 hours before dawn to permit daylight exploitation of success.

When an attack is a continuation of daytime operations, the OPFOR usually attacks enemy positions and lines from the march. This keeps the enemy from upgrading the defense or drawing up reserves. It also keeps the enemy from disengaging and breaking off from the attacking units to occupy a defense at a new line.

The actual attack may proceed in various ways. It may occur--
- Without fire preparation, tanks, or illumination.
- During complicated weather conditions.
- In broken terrain, forest, or jungle.

When acting independently, the commander assigns motorized infantry and tank units, if available, the mission of penetrating the enemy's flanks and rear. Missions include--
- Capturing road junctions, water crossings, bridges, and other key objectives.
- Occupying key objectives until the main force arrives.

At the beginning of the attack, the OPFOR uses a battle formation and avoids complicated maneuvers for better control. The battalion commander usually designates an element of the battalion to make contact and hold the enemy at his front while the rest of the battalion or its maneuvering force envelopes the enemy.

The width of frontage and composition of battalion combat missions are the same at night as they are for a day attack. However, the battalion strives to achieve its immediate or subsequent missions by dawn. If the battalion is unable to do this, the commander may assign a supplementary line that it must take by dawn. The OPFOR uses the supplementary line to create favorable conditions for committing the second echelon and for repelling enemy counterattacks at dawn. The location of the supplementary line depends on the--
- Total hours of darkness available.
- Time of the attack.
- Preparedness of companies for night combat.
- Availability of illumination support.

During the attack, units often attack from various directions. Open terrain without natural barriers is most favorable for a night attack. However, it must have reference points visible in the darkness for directing the actions of companies. Such reference points could be highways, dirt roads, treelines, streams, or clearings. Vehicles stay close to trees and gullies. Upon approaching the assault position, a short halt may be necessary for additional orientation or to clarify the mission of units company level and below. The OPFOR prohibits long halts.

When illumination is sufficient, the width of the strike sector may be 500 to 750 meters for a motorized infantry battalion (the same as it is during the day) and 150 to 200 meters for a company. During less favorable conditions, the OPFOR may decrease the battalion strike sector. On a dark night, the spacing between soldiers in battle formation reduces to 4 to 5 meters. Squads and platoons attack without gaps.

Commitment of the second echelon under night conditions presents some difficulty. Therefore it is advisable to assign sufficient forces to the first echelon to ensure completion of the mission during the night without committing the second echelon. The commander may commit the battalion second echelon or reserve before daybreak, but only if the commitment is very simple and uncomplicated.

Transition to Daytime

When shifting from night to daytime combat, the OPFOR:
- Reorganizes its reconnaissance.
- Updates and reassigns missions.
- Reinforces air defenses.
- Secures flanks.
- Replenishes ammunition and other supplies.

DEFENSE

Night creates many difficulties for the attacking forces but offers considerable advantage to the defender. Darkness reduces the effectiveness of an attacker's reconnaissance, observation, and aimed fires. It also provides the defender with better concealment than the attacker. At night, it is more difficult for the attacker to maneuver and control his forces. The defender, on the other hand, can move forces under the cover of darkness from the forward edge or from areas threatened by the enemy before the attack begins. This conserves his forces, causing the enemy to attack areas of little value. The enemy can attack suddenly or infiltrate through gaps.

Repelling Enemy Attack

The mission of battalion and companies in a night defense is to repel a surprise enemy assault. In order to be prepared to repel an assault, the battalion commander must--

- Reinforce the combat security outposts.
- Increase observation of the enemy.
- Improve friendly obstacles ahead of the forward edge.
- Post local security in all companies (observers, two-man patrols).
- Ensure companies are fully alert and ready to fire.
- Prepare all weapons while it is still light.
- Specify procedures for using night-vision devices and for weapons situated in the depth of strongpoints to occupy temporary firing positions at the forward edge.
- Indicate terrain sectors (ahead of the forward edge, in gaps between units and on flanks) for artillery to target.
- Take measures to secure gaps between strongpoints and to secure boundaries and flanks.
- Establish the defensive illumination plan.
- Determine reference points easily visible at night.
- Determine the identifying markings of friendly troops and methods or orientation.
- Assign missions to companies for destroying and blinding enemy night-vision equipment.
- Supply defending companies with tracer rounds and terrain illumination equipment.
- Determine security for engineers working in the defensive area and establish assembly points for them in case of attack.
- Determine possible enemy night activities.
- Determine tasks for reconnaissance.
- Use night-vision devices.

- Select locations of observation and listening posts.
- Prepare the fire plan.
- Establish signals for warning, control, and identification.
- Ensure proper camouflage.

The OPFOR may find it necessary to reinforce night defenses and to increase the density of fire in front of the forward edge as well as in sectors not occupied by friendly units. It may move up reserves or second-echelon forces to the forward edge for the night.

On detecting the launching of an enemy assault, infantry companies as well as artillery and mortars, commence fire. All direct fires assets (tanks, IFVs, APCs), and artillery conduct direct fire against single targets and concentrated fire against the assaulting enemy. Priority of fires is against enemy artillery and mortars firing illumination rounds, and enemy searchlights.

When not engaged fighting the ground battle, the air defense platoon, infantry troops, and tanks, repel raids. They can also destroy air-dropped and artillery delivered illumination.

The OPFOR attempts to repel enemy attacks from as far as possible with effective fire, using night-vision devices or illuminating the enemy assault formation. When the enemy comes to within 300 to 400 meters of the forward edge, the first-echelon companies use their illumination posts. The OPFOR accomplishes blinding using illuminating and smoke projectiles (mortar rounds, artillery, and rockets).

If the enemy penetrates the battalion perimeter, steps are taken to stop his advance. The battalion halts the enemy advance by concentrated artillery and mortar fire and flanking fires by available direct fire assets. Infantry platoons and companies stand firm on key terrain. The OPFOR conducts a counterattack by the second echelon or reserve against the enemy flanks and

rear. The commander closely coordinates the time of arrival of the counterattacking elements at the line of deployment. He assigns guides to each route in addition to marking forward movement routes. This ensures proper timing of the counterattack.

Counterattack

Planning for an OPFOR counterattack begins with the preparation and organization of the night defense. The night counterattack must be simple and quickly carried out. A determined surprise night counterattack, even by a small force, could have considerable impact on the enemy's night attack because of its psychological effect.

Successful counterattacks at night depend to a considerable degree on the organization of the battle formation. In order to simplify the organization of the counterattack, it is advisable to attack in one echelon. A powerful initial thrust can stun the enemy and thus assure a quick success. Using single-echelon combat formations simplify coordination. This eliminates the necessity for changing the formation of the counterattacking unit. It also simplifies difficulties associated with the commitment of the reserves. The OPFOR takes care to not overextend the depth of the counterattack.

While it is still light, the chief of artillery reviews or prepares data for artillery and mortar fire during the preparation for the counterattack. He assigns artillery, mortars, and tanks preparation fire missions against any enemy penetration and in support of the counterattack. He plans the conduct of the artillery strike during the period when the counterattacking units are moving up to the deployment line. In planning fire support for the counterattack, the chief of artillery allocates tasks to the artillery and mortars to prepare concentrated fire in the area of probable enemy penetration.

After a successfully mounted counterattack, the OPFOR--
- Consolidates the captured line.
- Organizes fire and illumination.
- Equips weapons with night-vision devices.
- Prepares all personnel and weapons to repel repeated enemy attacks.
- Lays mixed minefields in front of the occupied line.

Transition to Daytime

When shifting from night defense to day combat, the battalion commander covertly moves companies, platoons, and weapons to their primary positions before dawn. These are the elements he previously moved to temporary firing positions for the night defense.

ILLUMINATION

The OPFOR employs illumination during a night attack in a manner that hinders the enemy's activities but at the same time does not disclose OPFOR objectives. Personnel should remain on unilluminated ground but where they are able to see the enemy clearly and conduct aimed fire against him. In the attack, the OPFOR organizes illumination to cover the full depth of the area where the commander expects combat action.

The senior commander organizes illumination support. A motorized infantry battalion receives a certain amount of illumination and light-signaling assets to perform the specific night mission. The mortar platoon organic to the battalion provides the majority of illumination support. Commanders establish and control two or three illumination posts (one per platoon) in the companies. They assign air defense platoons the missions of destroying enemy illumination (airdropped, mortar, and artillery rounds, and parachute flares).

One of the most important measures in night defense is illumination support. The OPFOR uses illumination to--

- Illuminate the terrain and objectives.
- Improve visibility of the ground and of enemy targets.
- Adjust artillery fire.
- Blind observation posts and weapon crews.
- Observe the battle area.
- Orient troops during the course of battle.
- Support the conduct of aimed fire.
- Combat the enemy's illumination support equipment.

Illumination serves two basic purposes during the night attack: First, to ensure correct direction of movement and coordination of units, and second, to facilitate observation of the battlefield and the enemy.

The basic principles in the employment of illumination devices are surprise and massing. Consecutive concentration of illumination equipment achieves massing for the OPFOR. The OPFOR considers radius, intensity, and duration important in determining which particular device to use.

The OPFOR uses periodic or continuous illumination. It reserves continuous illumination for a major attack against centers of resistance or fortified areas or for repulsing counterattacks.

The commander plans--

- The number and location of illumination posts.
- The reserve to be retained.
- The amount and type of illuminating equipment to allocate to units.
- Target indication procedures, and illumination readiness time.
- Incendiary shell fire to start fires and blind or illuminate the enemy

The OPFOR uses light-signaling assets for--

- Orientating on the terrain.
- Designating targets.
- Calling in, transferring, and ceasing fire.
- Issuing commands.
- Identifying and marking friendly companies.
- Illuminating boundaries between battalions.
- Marking movement routes (cross-country routes)and lines.

Characteristics of example illumination signaling devices are in Figure 21-3.

Device	Height of Ascent (meters)	Burning time, (seconds)	Signal Visibility Range (km)	
			From Air	From Ground
15-mm red, green, and yellow signal cartridge	50	5	100 to 120	day 2, night 8
26-mm red and yellow signal cartridge	60 to 90	6.6	100 to 120	night at least 3
30-mm red and green signal cartridge	250 to 350	8 to 10	100 to 120	day 3, night 15
30-mm red-smoke signal cartridge	200	20	up to 100	day 2
40-mm red signal cartridge with audible signal (chemical alert signal)	200	12	up to 100	0.8
Red, green, and yellow ground signal cartridges	--	30	30 to 50	night at least 3
Orange-smoke ground signal cartridges	--	30	15 to 25	day at least 3

Figure 21-3. Characteristics of example illumination signaling devices.

Illumination devices include--
- Illuminating artillery and mortar rounds.
- Colored marker-signal rounds.
- Lighted markers.
- Rockets and aerial bombs.
- Searchlights.
- Mines and tracer shells.
- Pyrotechnic flares.
- Trip flares with colored lights.

Each artillery battalion designates one platoon for illumination missions. Illumination can be either periodic or continuous. In the latter case, artillery and mortars fire illuminating rounds every 20 to 30 seconds. This is 5 to 10 seconds less than the full burning time of one round.

Illumination ensures effective artillery fire to distances of not more than 3,000 meters. The closest line of illumination in windless weather is fixed at no less than 500 meters from the howitzers detailed to carry out direct fire. Illumination fire missions attempt to locate targets programmed for destruction by direct fire approximately in the center of the illuminated zone. The OPFOR employs illumination during adjustment fire and fire for effect for the duration of the mission.

OPFOR artillery systems fire illuminating rounds behind targets to silhouette them. The OPFOR employs illuminating devices so as not to reveal the location and disposition of friendly troops, to blind them, nor to impair their night vision.

In a river crossing, illumination of the area begins after friendly units have reached the opposite shore. Only the objectives and the enemy locations are illuminated. The first line of illumination should be 500 to 700 meters from the river.

Illumination by searchlight is periodic. Searchlights turn on for 10 to 15 seconds and then switch off for the same period of time. The OPFOR employs illumination in a manner to hinder the enemy's activity but not disclose the objective to the OPFOR activity.

Aerial flares producing one million candlepower of illumination burn 3 to 6 minutes and provide a circle of illumination 500 meters to 4 km in diameter, depending on their height above the ground. An artillery star shell illuminates the ground for 30 seconds over a circle 500 to 1,500 meters in diameters. Illuminating cartridges with a range of 200 to 250 meters burn for 7 seconds and illuminate an area with a diameter of 200 to 240 meters. (See Figure 21-4.)

Designation	Range (meters)	Average Illumination Period	Radius of Illumination (meters)
26-mm illuminating round	up to 200	7 seconds	120
30-mm illuminating round	up to 500	9 seconds	200
50-mm illuminating round	800 to 1,200	25 to 30 seconds	300
120-mm mortar illum round	700 to 5,300	40 seconds	up to 600
Air-dropped flares	N/A	6 minutes	over 1,500

Figure 21-4. Example illumination means.

In a night defense, illumination is critical. One illumination post is capable of providing terrain illumination ahead of the company defense frontage in a sector up to 2 km wide. The defender uses three illumination posts on battalion defense frontages up to 5 km. The OPFOR uses 120-mm illuminating mortar rounds and 122-mm illuminating artillery rounds to create the illumination required for ranges out to 1,500 meters (daytime sight settings). They should have a flare ignition setting at a distance no closer than 1,200 to 2,300 meters from friendly troops. If the flare ignition is closer, friendly companies and platoons may be illuminated and at may be at risk.

During the march, illumination orients units advancing to deployment lines. This prevents confusion in combat formations and ensures precise coordination. Luminous markers along the routes of advance facilitate the rapid advancement of second-echelon units and reserve forces. Such markers identify assembly and rest areas. Drivers attach luminous distance indicators to a vehicle's rear light. The driver can determine the distance to the vehicle in front of him based on the number of red stripes he can see. An example is, one continuous red stripe visible at 50 meters or two red rectangles visible at 30 meters. Knowing these distances, the driver adjusts his spacing and speed accordingly.

EQUIPMENT

The OPFOR has a large variety of special equipment that it may employ to conduct night combat. Active and passive infrared night vision sighting devices are among the more important items of equip

ment. While these instruments permit better observation, they have range limitations and are only capable at longer ranges to defining the form, silhouette, and degree of contrast of an object. (See Figure 21-5.) Figure 21-6 lists examples of blue and gray night-vision devices.

The **active** devices operate on the principle of "illuminating" the ground object by means of infrared rays and converting reflections of the target into a visible image. The enemy can easily detect emissions of active devices. Therefore active devices are used sparingly. Radar falls in the active grouping since it radiates to conduct reconnaissance. Some infrared night-observations systems, NSP-2 and infrared night-driving devices, are either active or passive. With these devices it is possible, in complete darkness, to--
- Identify local features and engineer construction.
- Maintain observation of activities.
- Conduct aimed fire.
- Drive vehicles without headlights.

Passive devices do not emit detectable energy and, therefore cannot be detected. Night-vision devices, however, are not effective in heavy fog or during heavy rains.

The OPFOR makes extensive use of night-vision devices for--
- Conducting observation.
- Reconnaissance.
- Controlling the heading and rate of movement of tanks, APCs, and IFVs.
- Conducting small arms and artillery fire.

Device	Weight (kg)	Effective depth (meters)	Accuracy (meters)
PPN-1 machinegun night sight		man @ approx. 300	
PPN-2 IR machinegun night sight		man @ approx. 300 tank @ approx. 500	
PPN-3 machinegun night sight			
NSP-2, infrared night observation system			
NSP-3 small arms night sight			
Type-85 night vision goggles			
PVN-57 night vision sight			
APN-57 artillery night sight		tank @ approx. 700	
APN-2 artillery night sight		tank @ approx. 900	
APN-3 IR artillery night sight		tank @ approx. 1,000	
BN-1 night binoculars	1.5	200 to 400	
BN-2 night binoculars	1.8	up to 1,000	
TVN-2 infrared night driving device			
NPO-1 passive night goggles		80	
NNP-23 night observation device	32	up to 1,500	
LPR-1 laser reconnaissance device, rangefinder	2.5	5,000	+/-10
B-8 binoculars	0.61	to depth of visibility	-
B-12 binoculars	1.1	to depth of visibility	-
OMS-1 optical monocular	4.15	to depth of visibility	-
TR-8 scout's telescope	0.78	to depth of visibility	-
Rangefinder mounted on BRM-1k	-	up to 8,000	+/-10
SBR-3 short-range recon radar	-	up to 4,000	+/-5-

Figure 21-5. Characteristics of example night-vision equipment.

Tanks may also have infrared (IR) sighting equipment with an IR filter for the main armament and searchlights. They can identify targets at a range of up to 800 meters. Nevertheless, active IR can betray the exact position of the user if the enemy is using IR sensors. The OPFOR recognizes this hazard. Tank drivers use IR binoculars regularly in night training. Tank commanders use binocular-type passive IR sensors.

Sound-monitoring devices provide observation of the enemy when night-vision devices are ineffective or not used for security reasons. The monitoring devices pick up noises made by the movement of personnel and vehicles and by the firing of various types of weapons. The detected sounds can help the OPFOR determine enemy activities. The OPFOR also uses IR detection devices to define the direction to a target (equipment or personnel

Device	Capabilities	Characteristics	Advantages and Disadvantages
AN/PVS-2 NV Individual weapon	300 to 400 meters	weight 6 lb. 3.6X magnification Field Of View 10.4 degrees	(See note)
AN/TVS-2 NV Sight, crew-served weapon	800 meters starlight 1,000 meters moonlight	weight 16 lb.. 6.5X mag FOV 6 degrees	(See note)
AN/TVS-4 NV	1,200 to 2,000 meters	weight 34 lb.. 7X mag FOV 9 degrees	(See note)
AN/PVS-4 Night-vision sight, individual weapon	400 meters starlight, 600 meters moonlight	weight 3.9 lb.. 3.8X mag FOV 15 degrees	(See note)
AN/TVS-5 Night-vision sight, crew-served weapon	1,000 meters starlight, 1,200 meters moonlight	weight 7.5 lb.. FOV 40 degrees	(See note)
AN/PVS-5 NVG	75 meters starlight, 150 moonlight	weight 1.9 lb.. 1X mag FOV 40 degrees	(See note)
AN/PVS-7 NVG	150 meters starlight, 300 meters moonlight	weight 1.5 lb. FOV 40 degrees	(See note)
AN/TAS-5	1,200 meters	weight 22 lb.	Penetrates all conditions of limited visibility and light foliage. Short battery and coolant bottle life.
AN/UAS-12 Thermal TOW sight	3,000 meters	weight 18.7 lb. 12X magnification	Same as AN/TAS-5
AN/UAS-11 Thermal night-observation device	3,000 meters	weight 58.4 lb. w/tripod 9X magnification	Same as AN/TAS-5
Binoculars	intensifies natural light	7X50 or 6X30 power	Requires some type of visible light.
AN/PAQ-4 Infrared aiming light (Mounts on M16)	150 meters	weight .9 lb.. Used with AN/PVS-5 or PVS-7.	Detectable. Permits aimed fire during darkness.
AN/PAS-7 Hand-held thermal viewer	Detection range: Vehicles - 1,000 meters Personnel - 400 meters	weight 10.8 lb. 2.5X magnification	Penetrates all conditions of limited visibility and light foliage
AN/PPS-5B Radar	Range, 50 meters min. maximum: personnel - 6,000 meters vehicles -- 10,000 meters	weight 112 lb.	Detectable. Degraded by heavy rain, snow, dense foliage, and high winds. Line of sight. Has a 50-foot remote capability. Difficult to man-pack.
AN/PPS-15A Radar, very short range	Minimum range 50 meters Maximum range: personnel - 1,500 meters vehicles - 3,000 meters	weight 18 lb. audible and visual alarm	Detectable. Can be operated and transported by one man. Degraded by heavy rain, snow, dense foliage, and high winds. Reduced effectiveness during wind-blown rain. Line of sight. 30 foot remote capability.
Platoon Early Warning System	Detects target 15 meters from sensor. Two types of sensors in each set distinguish personnel or vehicles. Covers 250-meter front. Placed up to 1,500 meters from platoon.	weight 13 lb. Nine ground sensors. Sensors relay to monitor through wire or radio connection.	When connected by wire, is not detectable. Ease of operation. Not affected by climatic conditions. Animals can interfere with sensors.

Note: This night-vision device performs poorly in dark, obscured, or adverse weather conditions. Defeated by light (for example, street lights or headlights). Eye fatigue occurs after 3 to 5 hours.

Figure 21-6. Example blue/gray night-vision devices.

ARTILLERY SUPPORT

During periods of artificial illumination and when using night-vision devices, it is difficult to pinpoint the exact location of artillery bursts or to conduct artillery reconnaissance. Consequently, the commander assigns maneuver units more supporting direct fire weapons, whenever available. Supporting weapons either move separately from the infantry units, 100 to 200 meters to their rear, or directly on-line with them. When on-line, supporting weapons locate in the intervals between units or on the flanks, and their tasks include the destruction of re-established or newly detected enemy firing position and resources. Some of the artillery, provided with night-vision devices and attached to a battalion, may remain behind the assault position to support the attack when the battalion moves out to the attack. In the course of the attack, the OPFOR maintains close cooperation with the artillery by--

- Moving the artillery commander's command observation post closer to the battalion command observation post.

- Establishing effective communications.
- Changing the location of artillery promptly so that all the artillery can support the battalion during the seizure of important enemy objectives.

Although it is difficult to move artillery at night, the commander normally moves all artillery supporting the battalion to new firing positions by dawn.

Direct fire at targets not illuminated and without the use of infrared devices has some peculiarities that the commander takes into consideration. The OPFOR estimates the distance to the target and lays the guns directly on the target. It then determines a reference with a night aiming point or with the gun's collimator. During the attack, anti-tank weapons locate on the flanks to insure flank security and to preclude the possibility of friendly fires destroying vehicles.

AA - antiaircraft
AAG - army artillery group
AC - hydrogen cyanide
ACE - aviation control element
ACRV - artillery command and
    reconnaissance vehicle
AD - air defense
ADC - Air Defense Command
AG - advance guard
AGL - automatic grenade launcher
    or above ground level (for aircraft)
AM - amplitude modulation
AP - attack point or antipersonnel
    (munition or mine)
APC - armored personnel carrier
ARTY - artillery
AT - antitank
ATGL -antitank grenade launcher
ATGM - antitank guided missile

BDE - brigade
BN - battalion
BrAG - brigade artillery group
BTRY - battery
BZ - psychochemical agent

C^2 - command and control
CCD - camouflage, concealment, and
    deception
CDR - commander
CEOI - Communications-Electronics
    Operation Instructions
CHEM DEF - chemical defense
CN - chloroacetonephenone (blood
    agent)
CO - company
COE - chief of engineers
COP - command observation post
COR - chief of reconnaissance
CP - command post
CRP - combat reconnaissance patrol

CS - chlorobenzalmalononitrite (tear
    gas)
CSOP - combat security outpost
CX - phosgene oxime (blister agent)

DA - diphenylchloroarsine (stimulant)
DAG - division artillery group
DIV - division
DC - diphenyl cyanoarsine
DF - direction finding
DM - Adamsite (stimulant)
DMI - Director of Military Intelligence
DVCP - damaged vehicle collection
    point

EC - electronic combat
ENGR - engineer
EPM - electronic protection measures
EW - electronic warfare

FAC - forward air controller
FAE - fuel-air explosive
FD - forward detachment
FDC - fire direction center
FM -frequency modulation
FOP - forward observation post
FROG - free rocket over ground
FSE - forward security element

GA - Tabun (nerve agent)
GB - Sarin (nerve agent)
GD - Soman (nerve agent)
GPS - global positioning system

H - sulfur mustard
HD - mustard
HE - high explosive
HF - high-frequency
HL - mustard and Lewisite
HN-3 - nitrogen mustard (blister agent)
HQ - headquarters

ICM - improved conventional munitions
IFF - identification friend or foe
IFV - infantry fighting vehicle
IP - initial point
IR - infrared
IRP - independent reconnaissance patrol

km - kilometer
km/hr - kilometers per hour

L - Lewisite
LIGHT INF - light infantry
LOC - line of communication
LOP - lateral observation post
LOS - line-of-sight
LWIR - long-wave infrared

m - meter
MAINT - maintenance
MAT SPT - maintenance support
MD - military district
MDAG - military district artillery group
MECH INF - mechanized infantry
MG - machinegun
MMW - millimeter wave
MRP - mobile reconnaissance post
MSD - movement support detachment
MOD - mobile obstacle detachment
MOP - maintenance observation point
MRL - multiple rocket launcher
MTZD INF - motorized infantry
MWIR - medium-wave infrared

NBC - nuclear, biological, and chemical

OPFOR - Opposing Forces
OP - observation post

PLT - platoon
POL - petroleum, oil, and lubricants
PS - chloropicrin (lung irritant)
PWP - plasticized white phosphorus

RAP - rocket-assisted projectile
RECON & EC - reconnaissance and
    electronic combat
REG - repair and evacuation group
REGT - regiment
RD - reconnaissance detachment
RP - reconnaissance patrol
RPV - remotely-piloted vehicle

SAM - surface-to-air missile
SECT -section
SWIR - short-wave infrared
SOC - Special Operations Command
SP - self-propelled
SRBM - short-range ballistic missile
SSM - surface-to-surface missile
SVC - service

V - incapacitant nerve agent
VEESS - vehicle engine exhaust smoke
    system
VHF - very-high-frequency
VT - variable-time (fuze)
VX - nerve agent

WP - white phosphorus (smoke)

Page numbers in **bold type** indicate the main entry for a particular topic; this page often includes a definition of the indexed term. Due to slight adjustments in pagination after completion of this index, it is possible that, in a few cases, the indexed topic may start on the page before or after the page number shown here. Reference to units (division, brigade, battalion, company, or platoon) pertain to maneuver units, unless otherwise identified.
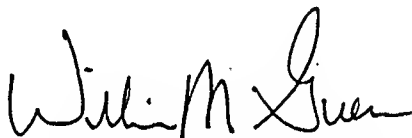
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The proponent of this pamphlet is the TRADOC Deputy Chief of Staff for Intelligence. This pamphlet is the definitive source for light OPFOR tactics for use at the Combat Training Centers and TRADOC centers and schools. It will also serve as the **coordinating draft** for a subsequent edition of the handbook in the form of a Department of the Army Field Manual. Users are encouraged to send comments and suggested improvements on DA Form 2028 (Recommended Changes to Publications and Blank Forms) through channels to the TRADOC ODCSINT, Threat Support Division, ATTN: ATZL-CST (Bldg 53), 700 Scott Avenue, Fort Leavenworth KS 66027-5310. Suggested improvements may also be submitted using DA Form 1045 (Army Ideas for Excellence Program (AIEP) Proposal).

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